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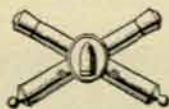
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Antiaircraft Defense Armored Divisions

The self-propelled antiaircraft artillery automatic weapons battalion now organically assigned to either the infantry or the armored division has a dual mission. The battalion is equipped and trained primarily for its antiaircraft mission, and in the early stages of war it will probably be employed primarily in that role. The battalion, however, has strong capabilities for ground support missions, and it is certain that some or all elements of the battalion will be given such missions early. When friendly air supremacy is established, the ground support mission may well become the main role.

The ground support mission was the subject of an article by Lt. Colonel Dorsey E. McCrory in the *JOURNAL*, May-June 1950. This article pertains to the antiaircraft mission.

Any war in the near future will require the initial employment of antiaircraft automatic weapons used in World War II. Improved weapons are in various stages of development, but the time element will not permit production soon in sufficient volume to equip a sizable force of AAA. For the time being, we must consider the tactical employment of the self-propelled weapons presently available.

Two types of equipment now in use are: the full-track M-19, mounting dual 40mm guns, and the M-16, half-track vehicle, with caliber .50 quadruple machine guns. The M-19 was developed near the end of the last war and was designed primarily to provide AAA protection to armored units. It possesses speed and maneuverability sufficient to meet the requirements of rapidly moving armor. It is an ideal weapon for its purpose and proved highly capable in the AAA defense of infantry units. The M-16, developed earlier in the war, is an excellent weapon, but is lacking in the desired degree of maneuverability.

AAA operations with an infantry or armored division present more problems in a rapidly changing situation than are met in a static defense. Priorities for the AAA defense of division installations change constantly with the situation. Therefore the AAA battalion commander will alter his defense plans to meet each new occurrence that arises under the direction of the division artillery commander.

The very nature of certain operations conducted by infantry and armored divisions will make it necessary to decentralize command and control of the supporting AAA self-propelled battalion.

Formation of regimental combat teams or separate task

forces within the infantry division will require the attachment of elements of the AAA to the separate force. The combat organization of the armored division will very frequently require the attachment of AAA units to individual combat commands and to the division trains. Normally, the AAA firing battery would be attached to such separate elements of the division.

Whenever attachments are made, operational control of the attached units passes to the commander of the force concerned. However, the AAA battalion commander retains responsibility for the administrative requirements of his organizations.

The battalion depends almost entirely on radio communications for control and is completely dependent upon radio in the operation of its warning system. When time permits, wire communications between fire units and platoon headquarters may be established.

On the offensive, the laying of wire lines is usually not possible; however a unit maintaining somewhat static defensive positions may have time to lay wire throughout the defended area to augment the radio command net. Dependence on radio in the battalion increases the problems of command and control and may dictate the decentralization of control to division elements other than the AAA battalion command echelon.

The effectiveness of the AAA can be more readily maintained in the normal operation of the infantry division with centralized control. In the armored division centralized control is difficult in most operations. Admittedly, under most conditions, such control of any unit is advantageous and should be maintained whenever possible.

Because of the speed of movement involved in infantry or armored operations, time for prior planning and issuance of orders is usually limited. To meet this problem the AAA battalion must have a sound, effective and detailed standard operating procedure (SOP) in order that the individual fire unit commanders, platoon commanders and battery commanders may be permitted to take automatic, immediate action without waiting for orders when a change in the situation occurs.

The self-propelled AAA battalion commander should be considered as the antiaircraft artillery advisor to the division artillery commander. As such he may be called upon to make recommendations as to priorities for AAA defense.

For The Infantry And

By Major Edward W. Fitzgerald, CAC

Normally, though, the AAA will be given the priorities by the division artillery commander and requested to make recommendations as to allocation of available antiaircraft artillery.

Whenever it is found necessary to attach additional AAA to a division, or to place self-propelled AAA of a corps in support of a division, the AAA battalion commander of the unit organic to the division will become the AAA battalion-group commander in the division. As the battalion-group commander, he will effect the coordination of AAA activities within the division for his own and the attached AAA unit. Should it be necessary to attach more than one AAA battalion to a division, such an attachment will usually be accompanied by the attachment of an AAA group headquarters to coordinate the additional AAA activities.

The division artillery commander is responsible for all artillery matters in the division, commands all its artillery and is responsible to the division commander for AAA protection. Priorities for AAA will either be given to the artillery commander, or he may make recommendations as to priorities to the division commander for his final decision.

Frequently one AAA self-propelled battalion cannot provide adequate protection for an entire division area. In order to provide the best AAA defense possible, a system of priorities must be established giving weight to the important elements or installations of the division in each phase of an operation. These elements and installations may include: (not listed in order of priority)

1. Division artillery
2. Division command post
3. Division landing strips
4. Assembly areas and bivouacs
5. Division trains
6. POL dumps
7. Bridges and defiles
8. March columns
9. Engineer dumps and operations
10. Other supply installations

PROTECTION OF DIVISION ARTILLERY:

During World War II, field artillery received approximately 75% of the top priority allotments of automatic weapons for AAA defense whenever automatic weapons

were available to divisions or in the corps. Field artillery positions, if not well concealed, can be easily spotted from the air and are a lucrative target for low-flying attacking aircraft. We cannot state that field artillery will, in the future, come in for such a high degree of consideration. With the development of new weapons of warfare, there may be times when other elements in the fight may be more important to the operation. However, it is felt that in any future major ground operation field artillery will require a certain degree of AAA protection. Normal allocation of AAA with the mission of providing such protection is one battery of AAA automatic weapons to a battalion of field artillery.

In the infantry and armored divisions we have an AAA self-propelled battery available for the AAA support of each field artillery battalion of the division. Should complete use of the organic AAA battalion for field artillery support not be feasible because of other priorities, first consideration should be given to the general support field artillery battalion and second consideration to the field artillery battalions providing direct support to the infantry regiments making the main effort. This allocation is not a hard and fast rule.

Basic field artillery doctrine dictates the selection of positions in defilade to avoid enemy observation. For the same reason, the antiaircraft with the mission of providing field artillery with AAA protection, must select positions that will not give away the field artillery positions. The 40mm weapons should be emplaced close to the defended unit to provide a defense against dive attack, but not so close as to interfere with field artillery firing. A recommended yardstick is for the AAA to take positions no closer than 100 yards. Positions in front or rear of field artillery are exposed to enemy counterbattery fire. A coordinated AAA battery defense is desirable should the field artillery battalion be deployed in a small battalion area.

When the field artillery displaces to maintain close support of the infantry, AAA will move with it. Very close coordination and liaison must be maintained between the supported field artillery and the AAA. Displacement will normally be by echelon (leapfrog movement) whenever the field artillery is on a close support mission; therefore the AAA must be prepared to protect the individual FA batteries during the movement forward, and in the new

positions. Ordinarily it is wise to have the same AAA units support the same field artillery units whenever they are working well together.

PROTECTION OF DIVISION COMMAND POSTS:

Division command posts can utilize passive measures for AAA defense in most situations and normally are low on the priority list.

PROTECTION OF DIVISION LANDING STRIPS:

Division consolidated landing strips may require AAA protection whenever it is advantageous for the liaison aircraft of the division to operate from a consolidated strip. Here, it is not felt that the airstrip itself needs AAA protection, but that the maintenance shops and dispersal bays would be the most lucrative target for attacking aircraft. Even if the division consolidated airstrip be high on the priority list, one battery of self-propelled weapons should be sufficient to provide an adequate AAA defense of such an installation.

PROTECTION OF ASSEMBLY AREAS AND BIVOUACS:

Troop assembly areas and bivouacs are particularly vulnerable to air attack when troops are moving into and out of areas due to the almost unavoidable congestion of personnel and vehicles. After occupation of assembly areas and bivouacs, some reliance can be placed on appropriate passive measures of defense such as camouflage, cover and dispersion. Major consideration in the AAA defense of bivouac or assembly area is a single control of all AAA weapons of the division in order to prevent premature fire on enemy observation aircraft.

For the best control of these weapons, when the division is in a bivouac area, it is mandatory that the division SOP contain provision for these weapons to be under the control of the antiaircraft self-propelled battalion. This provision will not only serve to prevent premature or unnecessary AAA fire, but will also facilitate the establishment of a coordinated AAA defense.

Elements of the organic self-propelled battalion should always be in position to provide AAA protection to assembly areas well ahead of occupying personnel when a movement into an area is under way. AAA defense should be provided until all elements have cleared an area when movement out of an area is being accomplished.

Enemy reconnaissance and observation planes will attempt to draw AA fire from an assembly area or bivouac for obvious reasons, therefore, it is essential that control be centralized under one AAA defense commander. The amount of AAA to adequately defend an assembly area or bivouac will vary depending upon its importance and size.

PROTECTION OF DIVISION TRAINS:

Division trains in an armored division may carry a high priority for AAA protection as they constitute a major element of the division, and are made up of all service elements not included in the combat commands, such as the medical battalion, the ordnance battalion, the quartermaster battalion with its POL vehicles, and the replacement company.

Normally the allocation of one AAA battery will meet

the requirement. In the infantry division there are no trains. The elements are included elsewhere.

PROTECTION OF BRIDGES AND DEFILES:

In most situations the AAA protection of march columns, rather than the AAA protection of bridges and defiles along the route of march, will be more advantageous. There may be times when a critical bridge or defile is of such importance as to warrant the allocation of some division anti-aircraft artillery to it.

It will normally be the responsibility of corps AAA to provide protection for important bridges, defiles, or river crossing sites. This will permit the division organic AAA to perform the assigned mission of AAA and ground support of the division.

PROTECTION OF MARCH COLUMNS:

The protection of march columns of armored or infantry divisions is an important task of the self-propelled AAA battalion. During World War II, some degree of success was attained in the protection of march columns by the employment of towed 40mm units in the protection of defiles along routes of march, with the AAA units leapfrogging to new positions as the other combat elements moved forward. Difficulty, however, was encountered very often, as the movement of the protected elements through defiles was completed before the AAA could successfully move through the division columns. When self-propelled weapons became available they were immediately employed within the march columns to give continuous AAA protection along the routes of march.

Priority within the march column is given the unarmed or lightly armored vehicles, because they are more vulnerable to air attack than heavily armored vehicles such as tanks.

Some AAA should always march with the leading combat elements of the armored division on the approach march in order that it may be available for AAA protection of the close support elements in the early stages of an engagement.

PROTECTION OF ENGINEER DUMPS AND OPERATIONS:

In certain phases of ground operations, engineer operations play a vital part in the movement of the divisions, particularly when the operation takes place on terrain which is broken up by streams, rivers or other water areas. A major river crossing operation brings the division engineers into a very high priority for antiaircraft protection, both in the build-up prior to the crossing phase, and the actual river crossing and bridging phases.

It is highly important that AAA elements effect an early crossing so that positions for defense may be taken up on the opposite shore, giving an all-around AAA defense of the bridges and crossing sites. As the organic elements of the division move forward to subsequent objectives, their organic AAA should accompany them, leaving the mission of protection of the bridges and crossing sites to the corps antiaircraft artillery.

AAA PROTECTION OF SUPPLY INSTALLATIONS:

It is not contemplated that divisional supply dumps will normally be sufficiently important to warrant a high priori-

ty for AAA defense. Passive defensive measures will usually suffice. Should it be necessary to concentrate critical supplies in a small area some AAA protection may become necessary. Main consideration should be given to vehicle concentration points, loading and unloading points, and the administrative elements of a supply point. In the armored division, where gasoline, oil and lubricants are the lifeblood of a successful movement, POL dumps are a major consideration for AAA protection.

EARLY WARNING

The elaborate air warning service which is furnished for antiaircraft in static defense will probably not be available for the antiaircraft with divisions. Therefore, the battalion requires an effective system of its own. The Anti-aircraft Operations Center (AAOC) should be portable and compact enough to be operated in the command or operation vehicle of the battalion headquarters. When practicable the AAOC should maintain contact with a more elaborate AAOC to the rear for the mutual exchange of antiaircraft intelligence.

The battalion now relies on eight organic visual observer (OP) teams for warning of hostile aircraft approach. These teams are limited to a 25-mile radius due to range limitation in radio equipment. When the battalion is located close to the enemy front the OP teams naturally have very limited value for frontal coverage.

It has been recommended that five AN/TPS-1B target acquisition radars, one per battery, be included in the authorized equipment to furnish longer range warning and to augment the OP warning service. It is contemplated that these radars, like the OP's, will report aircraft locations to the AAOC, where they will be filtered, evaluated, and broadcast over the regular AAIS net. Each battery will also have the benefit of the warning furnished by its own radar, a pertinent advantage when the battalion is widely scattered.

TACTICAL EMPLOYMENT

Basic rules for AAA automatic weapons in any type defense:

1. Defend adequately the important objectives.
2. Provide an all-around defense.
3. Thicken or extend the defense along lanes of approach favorable to enemy aircraft.
4. Select positions for good observation and fields of fire.
5. For ease of tracer observation and for mass of fire

on any target, emplace individual fire units 300 yards to 400 yards apart.

6. Emplace 40mm units close around the objective to utilize the longer range on all incoming courses.
7. Emplace the quadruple mount machine guns farther out where the fast traversing rates can handle the crossing courses.
8. Tactical planning slant ranges:

40mm Gun	1500 yds
Caliber .50 MG	600 yds

FIRE DISCIPLINE

Lack of fire discipline can lead to appalling results. It presents a problem that requires emphatic action on the part of battalion commanders before battle begins. It is not adequate just to establish fire discipline among AAA troops. The AAA commander should prevail upon the division commander to authorize control of fire discipline of all AAA weapons in the hands of non-AAA units. The AAA commander will be held responsible for the errors of these untrained troops, and he should have an opportunity to indoctrinate them fully before the more trigger-happy elements have a chance to cause grave damage.

Fire discipline includes two imperative requirements:

To prevent fire on friendly planes:

To withhold fire beyond effective ranges and at low angles of elevation.

To prevent fire on friendly aircraft, the AAA battalion gunners are well trained in aircraft recognition. This probably will not hold true for all of the other gunners. The great danger is that one gunner somewhere, may open fire on a friendly plane and other gunners, herdlike, will follow suit with a terrific volume of fire, which when started, is impossible to stop.

The only safe rule is to permit the gunners from non-AAA units to fire only when under direct attack by hostile aircraft. All gunners will require training to prevent their opening fire just because others have already done so. In some cases it may be necessary to have the weapons dismounted and stored.

The tendency of untrained gunners to open antiaircraft fire at excessive ranges is well known. Everyone in the area, except the gunner concerned, can observe that the fire is far behind the target and of no value. It wastes ammunition and lessens confidence in antiaircraft among members of other arms.

Moreover when fire is delivered at low angles, it falls on friendly troops with destructive and irritating results.



As an educated man, as an officer, you must know and understand the purposes of the threat so that you can help in its repudiation as a philosophy and in its control as a military force. The more you study it and set it up beside democracy the more convinced you will become that communism is a retrogressive movement, that it destroys freedom, that it is a treacherous detour on the great historic road toward individual dignity, national prosperity, world peace and security.—*Secretary of Defense Louis Johnson—before graduating class of U. S. Naval Academy, 2 June 1950.*

Major General Lewis Named To Command The Antiaircraft Artillery And Guided Missile Center

Major General John T. Lewis, now in command of the Army General School Center, Fort Riley, Kansas, has been named to command the Antiaircraft Artillery and Guided Missile Center, Fort Bliss, Texas, succeeding Major General John L. Homer. General Homer will retire on 30 September with 43 years of service in the Army.

General Lewis was promoted to the grade of Brigadier General in February, 1942, to command the 38th Coast Artillery Brigade (Antiaircraft), then in the defenses of New York City. In May, 1942, he was transferred to command the Military District of Washington. Continuing in that command he was promoted to the grade of Major General in March 1943.

In September, 1944, he went to Paris, France, to become chief of the Supreme Headquarters Mission for France and a month later was named commanding general of the Allied Expeditionary Forces Mission to France with station at Paris. In July, 1945, he assumed command of the French Mission of the U. S. Forces in the European Theater, and the following January became commander of the Western Base Section, in addition to his duties as chief of the French Mission.

In March, 1947, he returned to the United States where he was assigned to the Secretary of War's Personnel Board. In July, 1947, he was appointed deputy commander of the Second Army at Fort Meade, Maryland, and the following March assumed command of the Ground General School Center at Fort Riley, Kansas. He remained in command when the center was redesignated Army General School.

In November, 1944, General Lewis was awarded the Distinguished Service Medal for service as Commanding General, Military District of Washington, from May, 1942, to September, 1944.

In 1945 he was awarded an Oak Leaf Cluster to the Distinguished Service Medal for his outstanding contribution to the establishment and maintenance of a strong French Central Government in support of Allied operations against Germany.

In 1947 he was awarded a second Oak Leaf Cluster to the Distinguished Service Medal for exceptionally meritorious service in the redeployment of United States troops, in the disposal of surplus property, in the conservation and shipment of excess stores, and in the repatriation of large numbers of prisoners of war.

General Lewis was born at Rockford, Illinois, October 28, 1894. He was graduated from the University of Illinois with a Bachelor of Science degree.

He served as a brevet captain in the Illinois National Guard from June 8 to August 14, 1917, and a day later was appointed a second lieutenant in the Infantry ORC. On October 25, 1917 he was commissioned a second lieutenant in the Coast Artillery Corps.

He served with the American Expeditionary Forces in France in 1918 as a battery commander with the 69th Coast



Artillery, and later with the Graves Registration Service.

Between the wars General Lewis served with antiaircraft artillery troops in the States and in Hawaii, and soon became well known to our older readers for outstanding work in antiaircraft development at Aberdeen Proving Ground, Maryland. From 1929 to 1933 he served at Fort Monroe, Virginia, first as an instructor in the Coast Artillery School, and later as a member of the Coast Artillery Board. Here he continued pioneering work in antiaircraft development with the design of the Lewis Charts and extensive work in the design of fire control directors.

He graduated from the Coast Artillery School in 1924, and upon graduation entered Yale University, where he received his Master of Science degree in June, 1925. He graduated from the Command and General Staff School at Fort Leavenworth, Kansas, in 1935, and from the Army War College in 1938.

Upon graduation from the War College he was assigned to the office of the Chief of Coast Artillery where he became Chief of the Matériel and Finance Section. In July, 1941, he was transferred to the office of the Secretary of the War Department General Staff and served as an assistant to General Marshall, Chief of Staff, until he was assigned to brigade command.

General Lewis comes to his new assignment particularly well fitted for the important tasks ahead of him in the continued development of Antiaircraft Artillery and Guided Missiles.

Army Antiaircraft Command

By Lieutenant Colonel A. M. Lazar, GSC (CAC)

General Order No. 20, 29 June 1950, establishes the Army Antiaircraft Command effective 1 July 1950. Major General Willard W. Irvine has been designated Commander with Headquarters initially at the Pentagon in Washington, D. C. Implementing action is in process to establish the Command, with its subordinate echelons, at Air Force installations where the Continental Air Command and the Eastern and Western Air Defense Headquarters are located.

The Army Antiaircraft Command was established as a matter of priority to insure necessary joint planning, maximum efficiency and functional readiness of Army elements that become part of an air defense system for the Continental United States. Inasmuch as many of us will be closely associated with this Command, a review of its structure, modus operandi, and mission may be of interest.

Before reviewing the command and staff structure for the Army Antiaircraft Command, we should first note current policy for the air defense of the United States. Existing policy provides for the Air Force to be responsible:

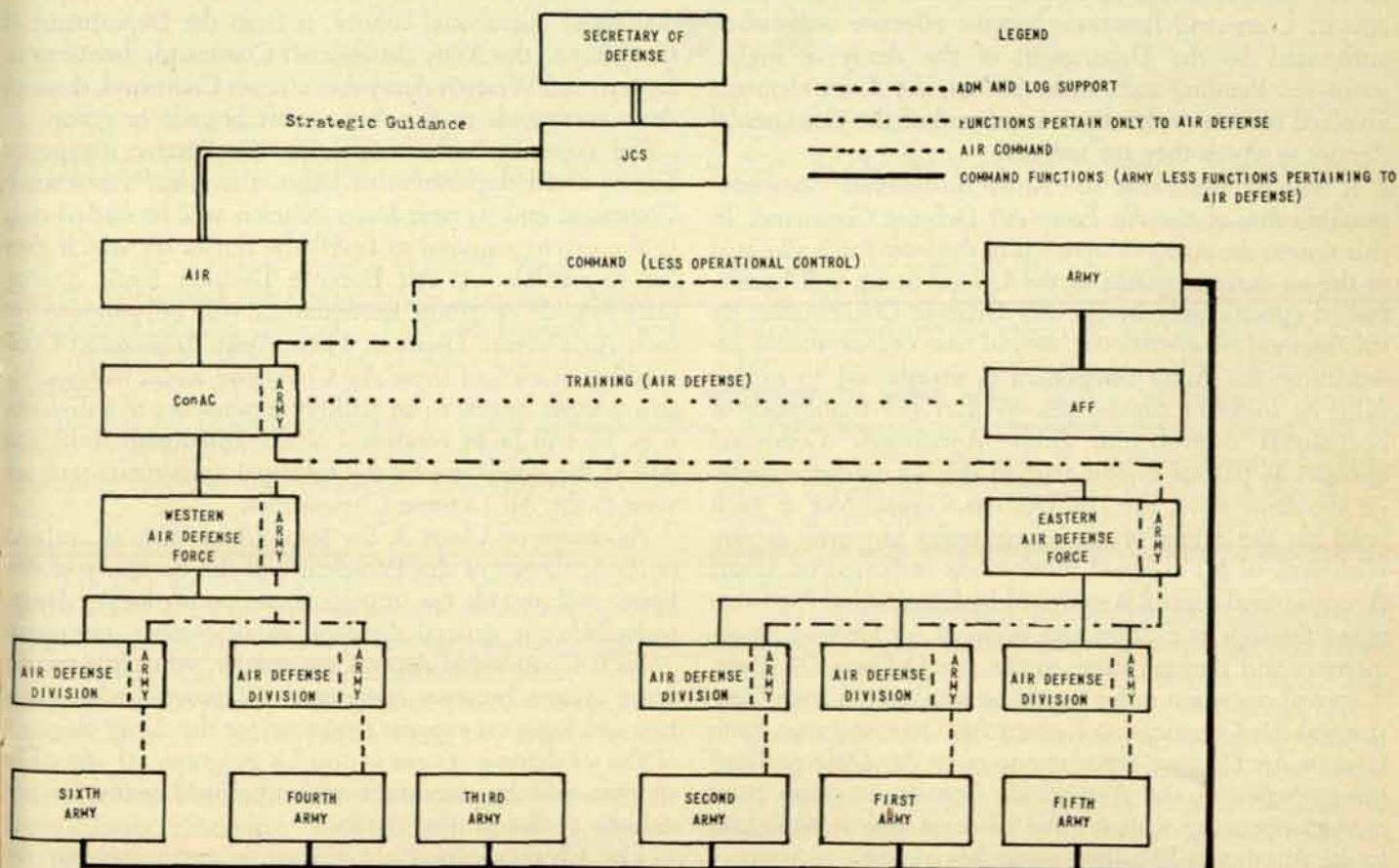
- For defense of the United States against air attack in accordance with the policies and procedures of the Joint Chiefs of Staff.
- To formulate joint doctrines and procedures, in coordination with the other Services, for this defense. Simultaneously, the Army is charged with providing Army elements as required for this defense in accordance with joint doctrines and procedures approved by the Joint Chiefs of Staff.

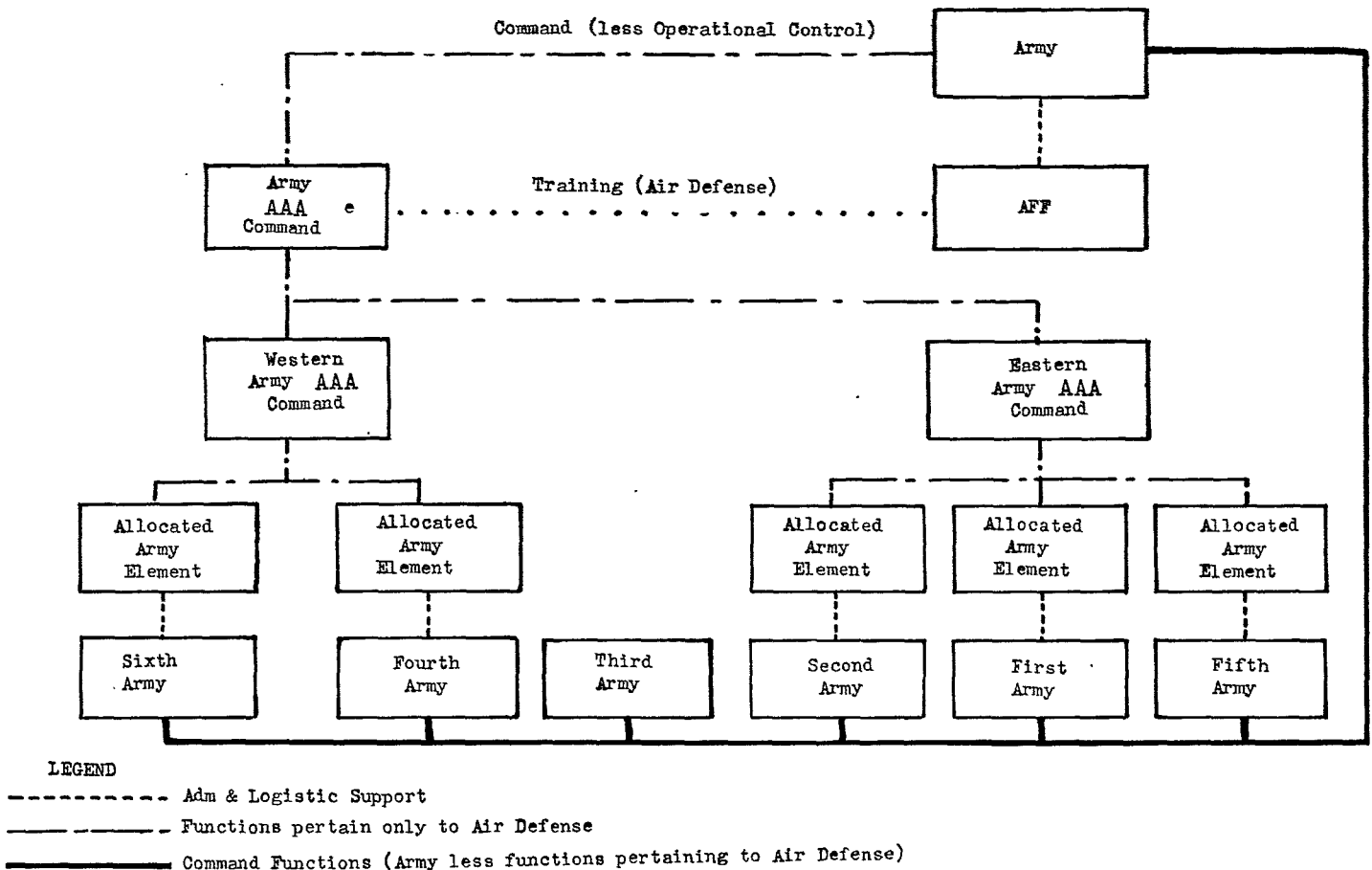
Analysis of this policy immediately establishes that an Army element will participate in the air defense system for the Continental United States as the Army Component of a joint force. The Army Antiaircraft Command and its staff structure are based on this fact.

This Command is shown on Charts A and B. Chart A depicts the structure wherein the Army Command is superimposed on the current Air Defense Command. Chart B depicts the Army structure with relation to the Army only.

ARMY AAA COMMAND STRUCTURE (OPERATIONAL CONTROL SUPERIMPOSED ON AIR COMMAND STRUCTURE)

Chart A





At the onset it should be emphasized that the Army Antiaircraft Command functions become effective only when authorized by the Department of the Army or higher authority. Pending such authorization, the Army elements involved remain under direct command of the Continental Armies to which they are assigned.

It will be noted that the Army Antiaircraft Command parallels that of the Air Force Air Defense Command. In this system the Army component of the joint force allocated to the air defense system of the United States will be controlled operationally by the Air Defense Commander. By this method of operational control, the organizational integrity of the Army component is maintained to exploit fully its inherent capabilities. Within the framework of operational control, the Army Antiaircraft Command operates as part of a joint staff in the air defense system. At the same time, the Air Defense Commander at each level has the degree of control necessary to permit accomplishment of his assigned mission. As indicated on Chart A, operational control is exercised by Continental Air Command through its Eastern and Western Air Defense Headquarters and through them to the Air Defense Divisions. A typical operation order would be transmitted from Continental Air Command to Eastern Air Defense Force, from Eastern Air Defense Force to one of its Air Defense Divisions, thence to the Antiaircraft brigade or group commander operating with the Air Division and through him to the Antiaircraft battalions under his control.

The Army Antiaircraft Command channel, except for matters of operational control, is from the Department of the Army to the Army Antiaircraft Command, thence to an Eastern and Western Army Antiaircraft Command, through these commands to the Antiaircraft brigade or group.

For economy and conservation of effective manpower and to avoid duplication of effort, the Army Antiaircraft Command and its next lower echelon will be staffed only to the extent required to fulfill the duties for which they are responsible. At Air Defense Division level, Antiaircraft brigade or group headquarters will be provided for each Air Defense Division. These Army Antiaircraft Commanders at each of these Air Command levels will operate in a manner similar to an artillery commander of a division, i. e., he will be in command of the antiaircraft units and will at the same time be the principal antiaircraft staff advisor to the Air Defense Commander.

As shown on Chart A, the Joint Chiefs of Staff, subject to the authority of the President and the Secretary of Defense, will provide for strategic direction of the Air Force, to include the general direction of all combat operations.

Each Continental Army Commander, when the air defense system becomes operative, will provide administrative and logistical support requested for the Army elements of the air defense system within his geographical area. The support will be consistent with approved plans for the defense of the United States.

The Chief, Army Field Forces, is responsible for the

training and state of readiness of all Army combat units. The Army Antiaircraft Commander, in coordination with the Chief, Army Field Forces, will maintain close cognizance of the training and state of readiness of all antiaircraft units potentially available for the air defense system.

With the establishment of the Army Antiaircraft Command, the Commander thereof has been assigned the following general missions:

- a. *To represent the Chief of Staff, United States Army, at lower than Department level, on all matters of interest to the Department of the Army pertaining to air defense of the United States, but which are beyond the purview of the Chief, Army Field Forces, including planning for the air defense of the United States in coordination with the Air Force and Navy, and broad policy problems arising therefrom.*
- b. *To develop detailed plans for the tactical deployment of antiaircraft units allocated for the air defense of the United States.*
- c. *Serve as commander of such Army units allocated for the air defense of the United States by appropriate authority as directed in plans approved by the Chief of Staff, United States Army or higher authority.*
- d. *Support the Commanding General, Continental Air Command on the basis of joint agreements between the Department of the Army and the*

Department of the Air Force pertaining to policies and procedures for joint air defense of the Continental United States.

The Army Antiaircraft Command and Staff structure herein described is predicated on the assumption that the primary mission of antiaircraft is in an air defense role. It provides an Army Command for Army elements operating outside the control of the Continental Armies. When operating as part of an air defense system, either as a result of Joint Chiefs of Staff or Department of the Army action, the Army units allocated to air defense of the United States will be transferred from the Continental Armies to the Army Antiaircraft Commander.

When this force operates in the air defense system, the Continental Army Commanders are responsible only for administrative and logistic support. The Army Antiaircraft Command provides a direct line of Army Command at each level of Air Defense Command providing for: flexibility in planning and operations; insuring compliance with orders issued by the agency exercising operational control; and a clear channel for reclama if necessary to the Department of the Army to protect Army interests. With the creation of the Army Antiaircraft Command, it is considered that the objectives of the Department of the Army, the degree of control necessary to be inherent in the Air Defense Command, and the functional readiness of Army elements operating in an air defense system will be better served.



Army To Open 62 Schools For Reserve Corps Training

A total of sixty-two Army Organized Reserve Corps Schools throughout the United States have been approved for opening between October 1, 1950 and January 1, 1951, General Mark W. Clark, Chief of Army Field Forces, announced.

Operated by Reserve personnel with the assistance of Senior Army Instructors, the schools are planned to offer a maximum number of volunteer Reservists progressive branch training, and an opportunity to maintain and expand their military education.

It will give reservists a chance to earn credit for retention in the active Reserve, gain retirement points and possible credit for promotion. Other advantages include eligibility as replacements in Reserve units, utilization in any possible expansion of the Army of the United States, and eligibility for such Reserve or active duty training pay as may become available.

Instruction in the ORC schools is designed primarily for the volunteer Reservists. This includes members who are not assigned to troop program or mobilization designation

units under the current ORC reorganization.

The number of ORC schools is expected to increase gradually, reaching an eventual total of 334. The new schools are designed similar to the Allentown, Pennsylvania, experimental school which began instruction in January.

Under ordinary circumstances, evening classes will be conducted, with instruction by Reserve personnel. Army service schools are preparing the curriculum under the direction of the Office, Chief of Army Field Forces. Training material parallels associate basic and advance courses of the service schools.

Programs of instruction, and instructional material used by the service schools, have been adapted to provide a total of nine years' progressive instruction for each school. This covers three years each in a basic, advanced and staff course.

Classroom work will be accomplished during Reserve training assemblies, consisting of 24 sessions a year. Field work within budgetary ceilings will be given in active or reserve duty training periods conducted on week-end tours or during a 15-day summer active duty tour.

HONOR ROLL

- **88th AAA Airborne Battalion**
April 1949—Lt. Col. Page E. Smith
- **228th AAA Group**
July 1949—Col. David W. Bethea, Jr., S.C.N.G.
- **107th AAA AW Battalion (M)**
July 1949—Lt. Col. Thomas H. Pope, Jr., S.C.N.G.
- *713th AAA Gun Battalion (M)**
July 1949—Maj. W. B. Pollard, Jr., S.C.N.G.
- **260th AAA Gun Battalion (M)**
July 1949—Maj. Archie C. Watson, Jr., D.C.N.G.
- 678th AAA AW Battalion (M)**
July 1949—Lt. Col. M. T. Sullivan, S.C.N.G.
- **305th AAA Group**
August 1949—Col. John S. Mayer, N.Y., O.R.C.
- **21st AAA AW Battalion (SP)**
October 1949—Maj. John F. Reagan
- **59th AAA Battalion (SP)**
October 1949—Lt. Col. Landon A. Witt
- **69th AAA Gun Battalion (M)**
October 1949—Lt. Col. Alfred Virag
- *101st AAA Gun Battalion (M)**
December 1949—Lt. Col. Henry J. Ellis, Ga. N.G.
- **19th AAA Group**
December 1949—Col. George R. Carey
- **39th AAA AW Battalion (M)**
January 1950—Lt. Col. Edward T. Ashworth
- **4th AAA AW Battalion (M)**
January 1950—Lt. Col. Ernest L. Bush
- **503d AAA Operations Detachment**
January 1950—1st Lt. Peter C. Sweers, Jr.
- **75th AAA Gun Battalion**
January 1950—Lt. Col. John F. Ballentine
- *40th AAA Brigade**
January 1950—Col. Morris C. Handwerk
- *62d AAA AW Battalion (SP)**
January 1950—Lt. Col. Arthur F. Schaefer
- **226th AAA Group**
January 1950—Col. John D. Sides, Ala. N.G.
- **146th AAA AW Battalion (SP)**
February 1950—Lt. Col. R. H. Franklin, Mich. N.G.
- **70th AAA Gun Battalion**
March 1950—Lt. Col. Francis Gregory
- **68th AAA Gun Battalion**
March 1950—Lt. Col. Raymond C. Cheal
- **10th AAA Group**
March 1950—Col. W. H. Hennig
- **95th AAA Gun Battalion**
March 1950—Major Nelson C. Wahlgren
- *79th AAA Gun Battalion**
April 1950—Lt. Col. Henry W. Ebel
- **768th AAA Gun Battalion**
April 1950—Lt. Col. Theodore H. Kuyper, Ill. N.G.
- *229th AAA Group**
April 1950—Col. Edward Isaachsen, Ill. N.G.
- **207th AAA Group**
April 1950—Col. George T. Stillman, N.Y. N.G.
- **204th AAA Group**
April 1950—Col. John Barkley, La. N.G.
- **251st AAA Group**
May 1950—Col. Anthony Long, Cal. N.G.
- **35th AAA Brigade**
May 1950—Brig. Gen. Robert W. Berry
- 107th AAA Brigade**
May 1950—Colonel John W. Squire, Va. N.G.
- *340th AAA AW Battalion (M)**
May 1950—Lt. Col. George V. Selwyn, D.C. N.G.
- **103d AAA Brigade**
May 1950—Brig. Gen. Russell Y. Moore, Conn. N.G.
- **212th AAA Group**
May 1950—Col. Joseph A. Moore, N.Y. N.G.
- **227th AAA Group**
May 1950—Col. Percy L. Wall, Fla. N.G.
- 11th AAA Group**
June 1950—Col. John L. Golf
- **34th AAA AW Battalion**
June 1950—Lt. Col. James R. Gifford
- **527th AAA AW Battalion**
June 1950—Lt. Col. Joseph H. Cunningham, La. N.G.
- 71st AAA Gun Battalion**
June 1950—Lt. Col. Clair M. Worthy
- 443d AAA AW Battalion (SP)**
June 1950—Lt. Col. Robert G. Finkenaur
- **715th AAA Gun Battalion**
June 1950—Lt. Col. William H. Uter, N.Y. N.G.
- **265th AAA Gun Battalion**
June 1950—Major Harry Botts, Fla. N.G.
- **705th AAA Gun Battalion**
June 1950—Lt. Col. M. P. DiFusco, R.I. N.G.
- 753d AA Gun Battalion**
June 1950—Lt. Col. William A. Smith
- **105th AAA Brigade**
June 1950—Brig. Gen. Alfred H. Doud, N.Y. N.G.
- **105th AAA Operations Detachment**
June 1950—Capt. Paul D. Vancelette, N.Y. N.G.
- **127th AAA AW Battalion (SP)**
June 1950—Lt. Col. Hartley G. White, N.Y. N.G.
- **518th AAA Gun Battalion**
June 1950—Lt. Col. Harry Hewitt
- **214th AAA Group**
June 1950—Col. Jack G. Johnson, Ga. N.G.
- **202d AAA Group**
July 1950—Col. John W. Anslow, Ill. N.G.
- 313th AAA Group**
July 1950—Col. A. F. Hoele, Pa. O.R.C.
- *78th AAA Gun Battalion**
July 1950—Lt. Col. Thomas W. Ackert
- *698th AAA Gun Battalion**
July 1950—Lt. Col. Frank Monico, Ill. N.G.
- **97th AAA Group**
July 1950—Col. Joy T. Wrean
- **507th AAA Operations Detachment**
July 1950—Capt. Edwin F. Bookter
- *65th AAA Gun Battalion**
July 1950—Lt. Col. Robert F. Moore

See Honor Roll Criteria on Page 21.

A TEST OF LEADERSHIP

By Brigadier General Francis P. Hardaway, U. S. Army, Retired

One good measure of leadership in any organization is furnished by the existing morale in that organization. The value of morale and the quality of existing morale become quite evident in battle, or under any conditions of continued adversity. Since this may not be entirely true under training conditions, we do well to study the morale factor.

We use the French word because no single English word expresses the moral and mental factors of confidence, hope, zeal, and spirit which morale implies. Morale may be defined as a mental state which includes confidence and pride in self, in leaders, and in the team.

The reader has probably observed some commanders who talked little about it, but who had the highest morale in their unit. Or he may have noted that others who spoke most glibly about morale were the least able to achieve it. At any rate, propaganda alone will not build morale. The appropriate and necessary talk must be backed up by sound action.

From *TIME**, 13 February 1950, under "Medicine" we quote from an article based on a bulletin of the U. S. Army Medical Department:

"The question was not, 'Why did they break?' " explained Major Sobel, "but 'Why did they continue to endure?' " Sobel and his associates found that a five-layer cushion of psychological defenses had protected the old sergeants—and presumably all soldiers who survived long stretches of combat in good mental health—from caving in. As the layers were peeled away, normal combat anxiety eventually turned into psychoneurosis and the old sergeant became a casualty:

"Distant ideals"—a reliance on such intangibles as "the four freedoms," democracy, and the desire for "keeping the enemy out of the United States"—were the first to dissolve.

Hatred of the enemy was the next defense to go . . . These soldiers had a much higher degree of directed hatred than the other psychiatric casualties seen in combat . . . However, it was not of sufficient force to counteract the effects of long-sustained combat."

The soldier then lost faith in short-term objectives—his hope that once a given hill was taken or a given town was entered he would be relieved.

Next went pride in himself. Pride was a "mainstay" of the old sergeants' personalities, "but once a break in efficiency occurred, their self-confidence weakened progressively."

"Loyalty to the group in these men was the last and most important line of defense . . ."

This study by the Medical Department emphasizes well the importance of group loyalty. We should also observe that group loyalty is a natural human instinct. If we set up proper conditions, train the soldier well, and imbue him with confidence in himself and in his leaders, group loyalty will develop of its own accord. We can also conclude that all elements of morale thrive best under good leadership.

The need for good leadership extends all the way down to the small unit commander who has most to do with the men who fire the weapons, gain the ground, and win the battle. There the soldier doesn't need to hear much talk about morale. He doesn't need to hear anything about combat fatigue. He does need to see courage and determination. He needs to hold an enduring confidence and pride in himself, in his leaders, and in his team.

No other walk in life offers better opportunities for the development in leadership than that to be found in the Army. We can take just pride, too, in the able leadership which our Army has demonstrated.

However, the main accomplishment in training leaders has been made through the medium of leadership on the part of those in all grades who were themselves excellent leaders through their own efforts to master the art, or because they were born leaders. That we would not change. This direct method of training through the example and precept of the actual leaders is the one best way to achieve results. We do wish to add, however, that it is not enough, as past experience shows.

At the outset of the last war it was practicable to select able leaders as division commanders. To a lesser extent the same was true for regimental and battalion commanders. The weak link occurred in the company grade officers, and quite naturally so. The ROTC's and the officer candidate schools had done well in training and selecting potential leaders. However, these young officers were in the same age bracket as were the men to be led, and in general they lacked experience in bossing or leading others. They also needed practical training in mastering their duties. While some were born leaders, many others needed progressive training.

Obviously there is a need for a more effective program in training the company grade officer to become a leader. This program may well include school courses. The main results will be achieved, however, in the battalions and companies where the commanders develop and test the leadership of the subordinate officers in a practical manner. This training will require constant observation and coaching coupled with valid performance tests. Any suggestion of mystery can be brushed aside. Genius and brilliance are helpful, but patient and thorough work is also involved.

In this training, each individual officer, whether he be

*Courtesy of *Time*. Copyright, Time, Inc., 1950.

student or teacher, will need to give a lot of thought to his own leadership. Progress can be expedited if he will take the time to test himself carefully.

As a starting point for such test the writer appends a program which he used in several organizations during World War II. It includes a questionnaire designed as a self test for battery commanders. It is limited in scope and subject to considerable improvement. However, it did arouse interest in leadership and stimulated thought and discussion.

In this program, company grade officers were assembled in classes. After a few remarks on the general subject, the test was issued to each member of the class in mimeograph form. Fifteen minutes was then given for each student to read the problem. The instructor then went over the problem briefly, after which the students were required to solve the problem.

A TEST OF LEADERSHIP FOR BATTERY COMMANDERS

1. Officers and noncommissioned officers are, in general, selected and promoted on the basis of their qualities of leadership. Not all, however, possess equally high qualities of leadership. Some acquire the qualities and habit of leadership readily. Others must work hard to obtain them. All should devote much time to the improvement of these qualities.

2. With a view to aiding battery commanders, and others to evaluate and improve their leadership, the following test has been devised.

3. Endeavor to score yourself objectively. You will not be required to divulge the score you obtain. In this way, you are more apt to make a critical analysis of your own qualities and thus obtain the greatest benefit from the test.

4. Retain this test and your score. Repeat this test later to determine what improvement has been made.

5. The test.

(1) *Loyalty*: Are you loyal to your military superiors? Do you loyally carry out orders even when your own opinions differ from those of your superiors? (If not, your men will probably follow your example and not be loyal to you.) Are you loyal to the officers and men under you? Having given them general instructions, do you back them up in carrying out these instructions? If your senior questions something done pursuant to your instructions, do you back up the men questioned and assume responsibility for your orders? If you are always loyal, score yourself 100. If you are generally loyal but are halfhearted in carrying out instructions that you do not personally agree with, score yourself 50. If you are always finding fault with the instructions of your superiors and giving only lip service to their orders and instructions, score yourself 0. If you have ever permitted your subordinates to be criticized for carrying out your orders without assuming the responsibility and the blame yourself, score yourself 0.

(2) *Attitude*: Are you cheerful and do you cultivate a calm and controlled manner, or are you fussy, or despondent, or moody? If you feel that you are able to take the bad breaks along with the good and maintain a spirit of cheerfulness in your company, especially when the going

is tough, score yourself 100. If, on the other hand, you have been guilty of showing irritability or of communicating to your officers and men a "let down" feeling, score yourself 50.

(3) *Courtesy*: Are you courteous at all times? Are you courteous to your subordinates as well as to your superiors? Have you ever bawled out an officer or noncommissioned officer in the presence of the latter's subordinates? In dealing with your subordinates, has your language been firm and decisive and yet free from sarcasm and abuse? If you have been uniformly courteous, score yourself 100. If you have, on occasions, lost your temper and given way to abusive and sarcastic language or have been in general discourteous, score yourself 75 to 50.

(4) *Personal Conduct*: Is your personal conduct above reproach and do you always set a good example? In answering this question, you will have to look at yourself objectively. Obviously, you are inclined to think well of your personal conduct. Obviously, too, you would not have reached your present position unless your personal conduct has been reasonably good. However you may have faults which should be corrected. For example, are you invariably temperate in your habits? Assuming you pay your debts, do you do so promptly? Examine your personal conduct, and if you think there is room for improvement, score yourself less than 100 and down to 75.

(5) *Professional Qualifications*: Are you professionally qualified for your job? You must be in order to have it, but are you as well qualified as you could be? Have you taken full advantage of opportunities to improve your professional knowledge and ability as an instructor? Do you really know the things you should know, and do you know how to apply them? Grade yourself from 100 down to 75.

(6) *Unselfishness*: Are you unselfish? You may be selfish and not know it. If so, you are probably the only one in the battery who doesn't know it. The two words "selfish" and "leader" just do not go together. So, examine yourself carefully. Think of the last time you went into bivouac at the end of a day's march. Did you get your wants attended to before you looked after the comfort of your men? Have you ever given up or delayed things you wanted to do in order to attend to the needs or comforts of others? Score yourself between 100 and 75. If you are less than 100, and most of us are, you have something you can start working on right away.

(7) *Appearance*: Appearance and soldierly bearing of your men reflect your leadership. A soldier with a sloppy, ill-fitting, or worn-out uniform is a result of your lack of leadership. Do you insist on neat, serviceable uniforms? Do you follow up to see that shortages are filled, that shoes are repaired, that laundry and cleaning are properly attended to? Compare your battery with the best appearing battery in your battalion or post. Don't try to make any excuses but, based on the comparison, score yourself between 100 and 75. Anything below 100 shows room for improvement.

(8) *Knowing Your Men*: Do you know your men individually? Do you know and understand their characteristics and their standards? On the basis of the first question, compute your percentage score.

(9) *Personal Interest*: Do you stand ready to help any man with his personal problems and do the men know that you are? Do you extend sympathy to those who have suffered a bereavement? Do you congratulate those to whom some good fortune comes? Score yourself between 100 and 75.

(10) *Consulting Noncommissioned Officers*: Do you frequently consult your noncommissioned officers and accord full consideration to their views and opinions? If frequently, score yourself 100. If occasionally, score yourself 75. If seldom, score yourself 50.

(11) *Promotion*: Have you evolved and do you apply a promotion scheme that is fair and just, that is in accord with Army regulations and instructions from higher authority and that recognizes merit, ability, and faithful service? If you have, score yourself 100. If you endeavor to make proper promotions but without much forethought or plan, score yourself 75.

(12) *Furloughs and Passes*: Have you a just and equitable plan for granting furloughs and passes and do the men know what the plan is? Score 100 for such a plan which is known to the men. Score 75 if you grant furloughs and passes as fairly as you can, but without a specific plan known to the men.

(13) *Punishment and Rewards*: Are you prompt in taking disciplinary action when it is called for and do you weigh carefully the offenses and the characteristics of the offender? Are you prompt in rewarding men who do good work, either with praise or other awards when appropriate? Do you make it possible for men to come to you with complaints and do you adjust their complaints whenever you can? Examine your actions on such matters over a period of several months and score yourself between 75 and 100.

(14) *Interest in Company Activities*: Do you take a personal interest in the food, in improving the living conditions, in providing additional comforts to the extent

practicable? Do you take an active interest in providing for recreation and athletics and do you attend? Go back over a period of three months and list what you have done along these lines. Then consider what additional things you might have done. Compare the two and score yourself between 75 and 100.

(15) *Keeping Men Informed and Stimulating Interest*: Do you keep the men of your company informed? Do you see that information periods are well conducted or do you slight them and find some excuse to omit them? Do you explain and have your officers and noncommissioned officers explain the purpose of the various training activities? Do you really make every effort to make training interesting? When you have a tactical problem, do you explain to all the men the situation and their part in the exercise and do you critique the problem for their benefit? Do you explain the need for realism and for thoroughness in training so as to fit officers and men for efficient performance in battle with minimum losses? On each item of this paragraph, score yourself between 75 and 100 and then record your average score.

(16) *Prompt Decision*: Do you make prompt and timely decisions and thereby facilitate proper organization and preparation for the job to be done? If you are hesitant, inclined to pass the buck, or delay, your subordinates will rate you near zero. Score yourself from 100 down to 50.

(17) *Efficient Planning*: Do you plan efficiently the work and training of your battery and see that all hands are prepared to do their part of the work? Score yourself from 100 down to 50.

(18) *Utilization of Subordinates*: Do you delegate responsibility and authority to your main subordinates efficiently? Do you give them definite tasks with reasonable opportunity to develop teamwork and complete the tasks efficiently? Or do you meddle? They like responsibility and your confidence. Score yourself from 100 down to 50.



Army Issues Seventh Volume in History of World War I

The seventh volume in the documentary history entitled "THE U. S. ARMY IN THE WORLD WAR, 1917-1919" was published July 11, the Department of the Army announced.

Called "Military Operations of the American Expeditionary Forces, Somme Offensive," the latest volume in the series is a compilation of Allied and enemy documents covering operations of the American II Corps and the Australian Corps in the Somme Offensive on the main defenses of the Hindenburg Line.

The book describes the hard-fought assaults of the American 27th and 30th Infantry Divisions against the Hindenburg Line in the vicinity of the St. Quentin Canal at Bellicourt. These assaults resulted in piercing the German line. The story of close cooperation between the American

and Australian troops in their advance is a feature of the volume.

Earlier publications in this 17-volume series have dealt with organization, policies, training, defensive operations, and earlier offensive operations. The next two volumes will complete the operational volumes of the series. Publication of the series was initiated in 1949.

The series is being released by the Office of the Army Chief of Military History, which is publishing also a narrative history of World War II.

All histories are being distributed to Government depository libraries and the public may purchase them from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. The price of the present volume, which contains 929 pages, is \$4.75.

Courses of Instruction, AAA & GM School, Fort Bliss, Texas

SCHOOL YEAR—1950-51

OFFICER COURSES

	Class Number	Reporting and Closing Dates
ARTILLERY ADVANCED (12 weeks at Fort Bliss, 33 weeks at Fort Sill) Purpose: To train selected officers for command and staff positions within units as well as for general staff duty with divisions. Capacity 205.	5-II 5-III	23 Sep -20 Dec 6 Jan - 3 Apr
ANTIAIRCRAFT ASSOCIATE BATTERY OFFICER (13 weeks) Purpose: To produce battery grade officers well grounded in the principles and technique of antiaircraft artillery. Special emphasis will be devoted to developing capable battery commanders. This instruction is provided primarily for officers of the Organized Reserve and National Guard in the branch. All artillery graduates of Army OCS, detailed in the Antiaircraft Artillery, will attend this course immediately after they are commissioned. Capacity 90.	22 23 24 25 26	16 Aug-20 Nov 11 Oct-30 Jan 7 Mar-11 Jun 25 Apr -31 Jul 31 May-31 Aug
ANTIAIRCRAFT ASSOCIATE ADVANCED (13 weeks) Purpose: To provide comprehensive instruction in condensed form which parallels that Antiaircraft Artillery portion of the regular advanced course. This instruction is provided primarily for officers of the Organized Reserve and National Guard in the branch, and regular officers of other branches. Capacity 70.	3 4	2 Feb - 7 May 2 May- 7 Aug
GUIDED MISSILES (REGULAR) (37 weeks) Purpose: To indoctrinate officers of all three of the services with the fundamentals, tactics, and techniques in the field of guided missiles. Capacity 50 (25 Army).	8 9	16 Aug-24 May 29 Nov- 6 Sep
ELECTRONICS (RADAR) (0120,0140) (26 weeks) Purpose: To train selected officers in theory, stressing fundamentals of electricity and electronics; and the operation, organizational maintenance, tactical and technical employment, and command inspections of radar sets peculiar to their respective arm. To familiarize them with the present and probable applications of electronics in the guided missile field. Capacity 25.	8 9 10 11 12 13	26 Jul -14 Feb 27 Sep -18 Apr 29 Nov-19 Jun 24 Jan - 1 Aug 28 Mar- 3 Oct 1 Jun - 7 Dec

ENLISTED COURSES

ANTIAIRCRAFT ARTILLERY MASTER GUNNER (2671) (26 weeks) Purpose: To train selected enlisted men in the general field operations of AAA units. Successful completion of the course will qualify enlisted men as "potential" AAA Master Gunners (MOS 2671). Capacity 25.	20 21 22 23	26 Jul -14 Feb 8 Nov-29 May 4 Jan -11 Jul 7 Mar-12 Sep
FIRE CONTROL ELECTRICIAN (AW) (0633) (25 weeks) Purpose: To train selected enlisted men in fire control operations of AAA automatic weapons units. Graduates are qualified for assignment to duty as Fire Control Electricians (MOS 0633). Capacity 20.	41 43 45 47 49 51 53 55 57	5 Jul -17 Jan 16 Aug- 1 Mar 27 Sep -11 Apr 8 Nov-23 May 4 Jan - 3 Jul 7 Feb - 8 Aug 21 Mar-19 Sep 25 Apr -24 Oct 6 Jun - 6 Dec
FIRE CONTROL ELECTRICIAN (GUN) (0634) (26 weeks) Purpose: To train selected enlisted men in fire control operations of AAA gun units. Graduates are qualified for assignment to duty as Fire Control Electricians (MOS 0634). Capacity 20.	42 44 46 48 50 52 54 56 58	5 Jul -24 Jan 16 Aug- 8 Mar 27 Sep -18 Apr 8 Nov-29 May 4 Jan -11 Jul 7 Feb -15 Aug 21 Mar-26 Sep 25 Apr -31 Oct 6 Jun -13 Dec
RADAR REPAIR AND MAINTENANCE (0775) (40 weeks) Purpose: To train selected enlisted men to maintain and repair AAA radar equipment. Graduates are qualified for assignment to duty as Radar Mechanic (MOS 0775). Capacity 25.	20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37	5 Jul - 3 May 9 Aug- 8 Jun 9 Aug- 8 Jun 6 Sep - 6 Jul 4 Oct - 3 Aug 4 Oct - 3 Aug 8 Nov- 7 Sep 6 Dec- 4 Oct 6 Dec- 4 Oct 4 Jan -25 Oct 7 Feb -21 Nov 7 Feb -21 Nov 7 Mar-19 Dec 4 Apr - 1 Feb 52 4 Apr - 1 Feb 52 9 May- 7 Mar 52 6 Jun - 4 Apr 52 6 Jun - 4 Apr 52

The capacity is indicated for each class.

THE ECHO BOX

By Lieutenant Colonel Leonard M. Orman, CAC

The *echo box* is a valuable aid to the radar user which will enable him to determine whether or not his set is operating at maximum efficiency. When radar was in its swaddling clothes no such means were available for checking over-all performance. The only indication that the set was operating satisfactorily was that echoes were received; whether these echoes were the best that could be received was indeterminate.

Sets are usually liberally provided with meters of various sorts and when one of these fails to show the required reading it is more than likely that the set is not performing at a satisfactory level. However, the fact that the meters show the expected readings is no true indication that the set is working satisfactorily throughout. These meters tap only strategic points, and should some untapped circuit become defective, these meters give no indication, yet the set may be rendered worse than useless. Should a failure occur in the PPI the set proper will continue to function fully—though fruitlessly. The converse is also true. The transmitter may go out of action, but the PPI, with its source of information inactive, can continue to operate with the presentation of an empty picture. The time-base would continue to rotate about the central spot and the range scales would function, and the lack of echoes would convey to the operator that there were no objects in the area under surveillance.

It will be appreciated that any form of automatic performance is vastly superior to attempting to guess the level of performance by observing that the set picks up a target at a long range. Those who are familiar with the phenomena of "trapping" (See "Weather and Radar," *Coast Artillery Journal*, July-August 1946) know that this can be a deceptive condition. Even under the most normal conditions, a set may pick up a large target at long ranges and still miss faint echoes at short ranges. If performance *must* be judged by targets rather than test equipment they should be small ones at short range giving signals not much larger than clutter.

Certainly then, the necessity for some certain method of testing radar performance was obvious. Hence the *echo box*.

WHAT IS IT?

An *echo box* provides a uniform phantom target for the purpose of measuring the over-all performance of a radar set. In essence, an *echo box* is simplicity itself. It may be technically described as a hand-tuned resonant cavity. Justification of the synonym of simplicity for this device can be made by the fact that *echo boxes* were improvised during the war by some ingenious technicians who used well-tinned gallon oil cans which were dented until maximum response was observed on the indicator.

HOW IT WORKS

The operation of the *echo box* may be explained simply by comparing it with a bell. When a bell is struck a sharp, hard blow, it rings loudly and continues to ring with decreasing intensity for a long time after the actual striking is completed. In a similar way, an *echo box* is made to oscillate when a strong transmitted pulse strikes the dipole antenna connected to the box. The oscillations continue for a length of time dependent on both the characteristics of the *echo box* and on the strength of the transmitted pulse that causes the box to oscillate. While the *echo box* is oscillating, or ringing, energy is radiated to the radar antenna, so that a large *echo* appears at the start of the sweep. (See figure 2)

The receiver of the radar can be tuned to the transmitter, in the absence of any reflecting objects, by varying the receiver tuning controls to the point that produces maximum indication of the *echo box* ringing. In addition to aiding in tuning the radar, the length of the ringing time, in yards of range over which the signal extends, can be used as an indication of the performance of the system. The normal ringing time for each system must be determined when it is at peak performance. Then a quick check can be made of each radar system to determine the level of performance.

All *echo boxes* are similar but in order to be of the most benefit to the AAA reader the specific box hereinafter referred to will be the Model TS-270/UP used with the SCR-584 (See figure 1).

The location of the dipole is critical for good results. For the 584 (as well as the SCR-784) this position is directly in front of the antenna at a distance of 6 feet. Only when the dipole is maintained in the same position can worthwhile comparisons be made.

As has been stated, some of the transmitted energy excites oscillations in the box. As these oscillations die down some of their energy is fed back into the radar's receiving system through the dipole. The saturated signal (See figure 2) which appears on the radar indicator is known as ringing. The longer this ringing extends, the better the performance of the radar; i. e., powerful transmitter and sensitive receiver. This effect can be noted on "A" or "J" type scopes as well as on PPI. Comparison of the ringing time observed with the "expected ringing time" allows an evaluation of the radar's performance. The expected ringing time is a function of several variables but with the exception of temperature these remain constant for a given *echo box* installation. The temperature change may be taken care of roughly by noting that the correction amounts to roughly one per cent loss in ringing time per 10°F. increase in temperature.

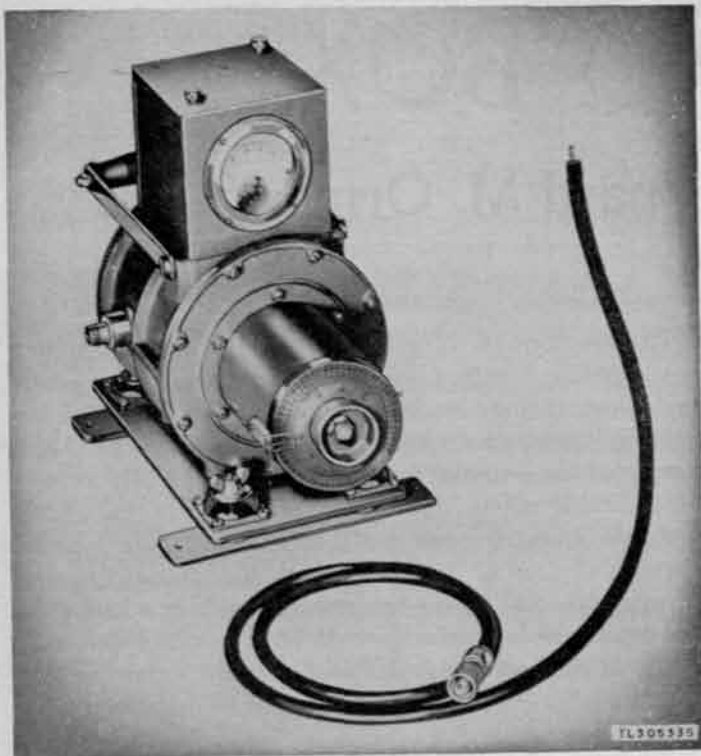


Figure 1—Echo Box TS-270A/UP will help keep your SCR-584 in A-1 shape.

When a radar under test shows less than the expected ringing time, it is an indication that the operating range of the radar is below par. A small loss in ringing time represents a great loss in effective range. Hence, *ringing time must be measured as carefully and accurately as possible.* For example, if the loss in ringing time is 140 yards the system can detect aircraft at 91% of its usual maximum range, whereas if the loss in ringing time is 4500 yards the aircraft may be detected at only six percent of the maximum range.

OTHER USES

The echo box is also invaluable to the trouble shooter for properly interpreted it will disclose maladjustments and troubles which might otherwise be difficult to locate. It is *most* useful in isolating trouble. For example, if the output meter reading is satisfactory but the ringing time is low,

the radar receiver is the probable source of trouble.

Other profitable uses of the echo box are: (1) in measuring frequencies both of the transmitter and the local oscillator, (2) tuning of the set for maximum efficiency, (3) spectrum analysis, (4) checking the automatic frequency control, (5) checking T-R box and receiver recovery, and (6) determining transmission line loss.

A word about handling of echo boxes. As might be inferred from the fact that echo boxes were improvised from dented cans, any damage which might change the mechanical shape of the echo box or damage the silvered surface of the cavity must be avoided. Hence the box must not be handled roughly nor should the cavity be taken apart unnecessarily.

By way of summary, the radar operator and maintenance man have a valuable assistant in the echo box in maintaining their radar sets at their optimum performance and it would be well worth their while to become thoroughly familiar with it.

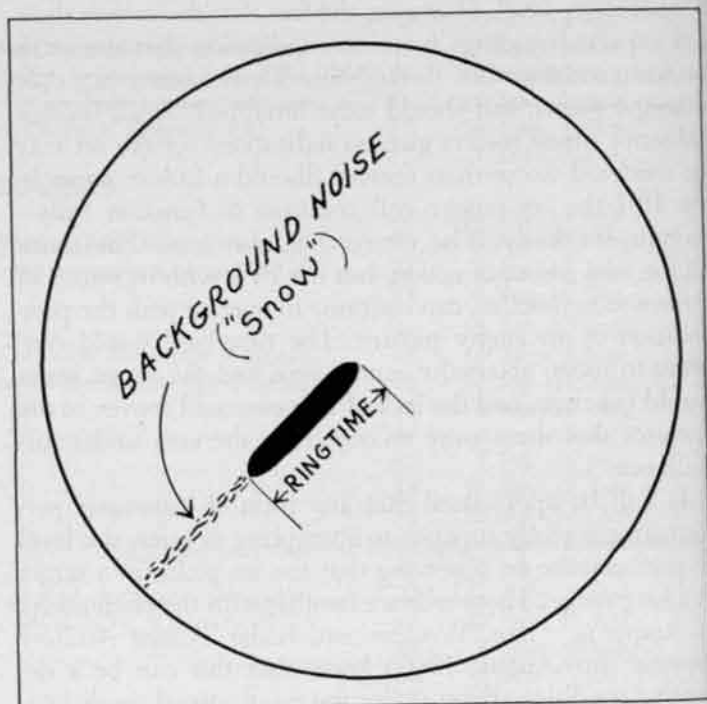


Figure 2—Ringing time pattern on PPI with antenna stopped.

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THE CASE OF THE AW DIRECTOR

By Major Frank D. Pryor, Jr., CAC

(Fire control for AAA automatic weapons is a vital subject. Continued development in this field is obviously required. In this article Major Pryor presents his own views. JOURNAL readers who may have a different viewpoint are encouraged to present their ideas. EDITOR.)

In the light of developments in new weapons, aircraft, and guided missiles, many antiaircraft officers advocate the immediate abandonment of the M5 series of directors in favor of present types of on-carriage computing sights, and the deletion of these directors from all pertinent Tables of Organization.

Can this contention be justified?

It is the purpose of this article to consider this question as a legal brief in which the AW director will be the accused. In this brief, the allegations of the critics will be isolated and debated in turn. After all available evidence has been presented, conclusions relative to the issue will be drawn.

THE ACCUSED

Before proceeding to carry out the mission of the article, let us present a short description of the AW director and its characteristics.

The M5A2 and M5A3 directors (Fig. 1) are off-carriage computers for 40mm guns. Each fire unit of the battery

includes one of these directors, a 40mm gun, and a generating unit. Eight of these units are included in each of four firing batteries comprising the AAA AW Battalion (Mobile). The directors compute firing data through the mechanical multiplication of the target's angular rate in azimuth and elevation by the projectile's time of flight to a future position of the target. The lead angles thus obtained, (plus a superelevation angle in elevation) are added to the present azimuth and angular height of the target respectively to produce firing data. These data, in terms of firing azimuth and quadrant elevation are transmitted continuously by a selsyn system to the gun.

The angular rates are measured by tracking the target through 8-power telescopes. The range is obtained through use of a coincidence type range finder, and is converted to time of flight within the director. The basic difference between the M5A2 and M5A3 directors lies in their relative tracking rates. The M5A2 has a maximum traverse rate of twenty degrees per second as compared to thirty degrees per second for the M5A3. With these capabilities, the M5A2 can track a 400 mph target across a course having a midpoint range as close as 575 yards; the M5A3 model can handle a target of the same speed across a course with a midpoint range as close as 385 yards. Smooth tracking of all targets is facilitated through an electro-mechanical arrangement which combines manual and pure rate tracking. This method is called "aided tracking."

As is true of all present AW fire control devices, the director does not produce round-for-round accuracy. Its operation is based on the "flythrough principle" which was discussed in a recent *ANTI-AIRCRAFT JOURNAL* article.*

CHARGE AND SPECIFICATIONS

The prevalent feeling of antipathy toward this director stems from a number of sources. If one asks the average director critic to substantiate his belief, at least one or more of the following reasons will be forthcoming.

The AW director should be scrapped because:

1. Nobody wanted to use it in combat during the last war. It was always left behind.
2. The addition of the range finder has not improved the device sufficiently to warrant its continued retention.
3. It is too heavy, bulky, and cumbersome to be transported in any rapidly moving situation.
4. Existing types of computing sights will produce equivalent or better accuracy on targets flying at expected combat speeds.

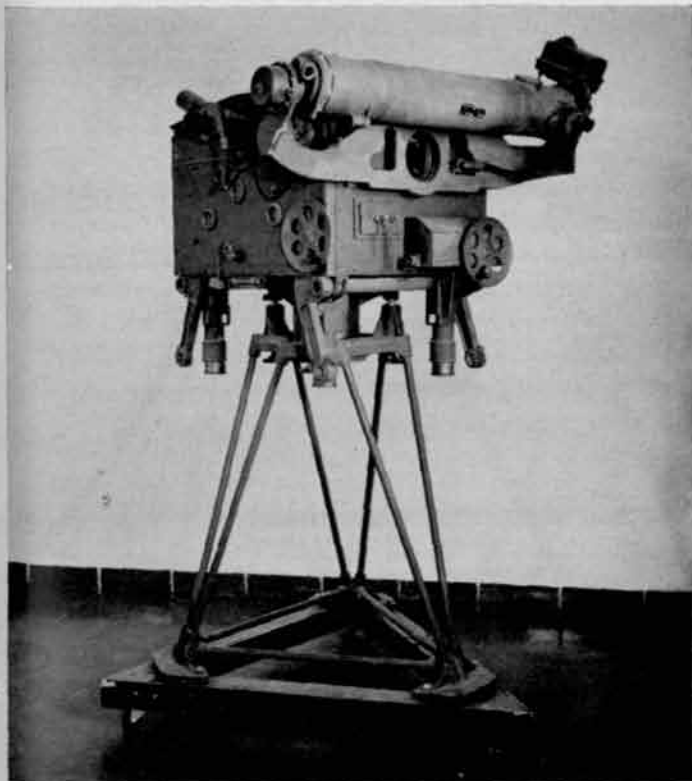


Figure 1—AW Director M5A3.

**ANTI-AIRCRAFT JOURNAL*, March-April 1950. "Analysis of Automatic Weapons Lead Requirements" by Capt. Harold Broudy.

5. Manpower requirements are excessive considering the results obtained.
6. The instrument cannot be maintained and operated in the Arctic as easily as present types of computing sights.
7. The British have discarded the M3 Predictor in favor of on-carriage fire control (The Stiffkey stick).
8. Target pickup is too difficult for the AW director on high speed aircraft.

The listed accusations will be considered as specifications to the general charge of inefficiency. Each will be analyzed in turn in order to provide a sound basis for either sustaining or rejecting the stand of the critics.

ANALYSIS OF THE SPECIFICATIONS

Specification 1. Nonutilization in World War II: This general statement is not valid in itself. The British used the M3 Predictor (essentially an M5A2 director less the range finder) extensively throughout the Battle of Britain. Our M5 and M5A1 directors were used successfully by AAA (AW) mobile and semi-mobile battalions throughout all campaigns in the Pacific theater. They were also heavily employed in fixed air defenses all over the world. This latter usage is the proper tactical employment of the instrument. A probing of those who support this specification as a reason for abandonment usually reveals that they refer to non-use of the director in a more limited sense. They point to the fact that when mobile and semi-mobile AW battalions were attached to corps and divisions for combat in the ETO, in many cases their directors were left behind in depot storage, at the beach or in position.

Is this fact a reason, per se, for junking our AW directors? To answer this question, it is necessary to ascertain the causes for this action. Investigation reveals that directors were left behind in combat operations for the following principal reasons:

- (1) Logistical—Transportation problems.
- (2) Personnel problems—The lack of early warning in forward areas required a continuous maximum AA alert status. This produced excessive fatigue in units manning the director because to maintain such an alert status required a 100% standby of personnel all the time. By turning in the directors and utilizing on-carriage sights as primary fire control *without equivalent loss of personnel*, units were able to meet the stringent alert requirements.

Some experienced officers believe that a basic lack of confidence in the director existed in many instances because of a lack of appreciation of "the nature of the beast" and of proper fire control techniques. There is no evidence to indicate that the decisions to leave AW directors behind in the ETO grew out of any such feeling on the part of the commanders. The reasons enumerated above would not apply in the stable AA defense situation which is the ideal and proper role for the AW director.

It should be noted here that the problem of excessive fatigue from continuous manning of matériel has been alleviated by incorporating a target acquisition radar in each battery of the AW mobile battalion. These radars should provide warning in any tactical situation.

Specification 2. Addition of the range finder has not significantly improved director accuracy: The allegation is compound folly! An inspection of Fig. 2 shows the relationship of the slant plane lead angles required to hit the target to the generated slant plane lead angles as produced by both the M5A1 and M5A2 directors. The target course analyzed here is what might be expected as an average combat course today.

The curve representing the lead produced by the M5A2 is based upon a range adjustment spot in the director of a minus 10% for the entire course. This correction is in accordance with proper operating procedure as currently taught at the AA & GM Br., TAS, Fort Bliss, Texas.

Two curves exemplifying leads as produced by the M5A1 director are also shown: one gives the lead generated assuming a constant range dial setting of 1000 yards, while the other portrays M5A1 leads with a constant range dial setting of 800 yards. Analysis indicates that a range setter would not have sufficient time during this engagement to reduce range from 1000 to 800 yards on the approaching leg and increase it again to 1000 yards on the receding leg in order to secure additional flythroughs. It should also be remembered that the ranges set into the M5A1 must be *estimated*, whereas they are measured continuously in the case of the M5A2.

A cursory glance at this graph is sufficient to realize the superiority of the M5A2 director over the M5A1. A detailed study reveals that out of a total of about seventeen seconds engagement time, the M5A2 is producing accurate firing

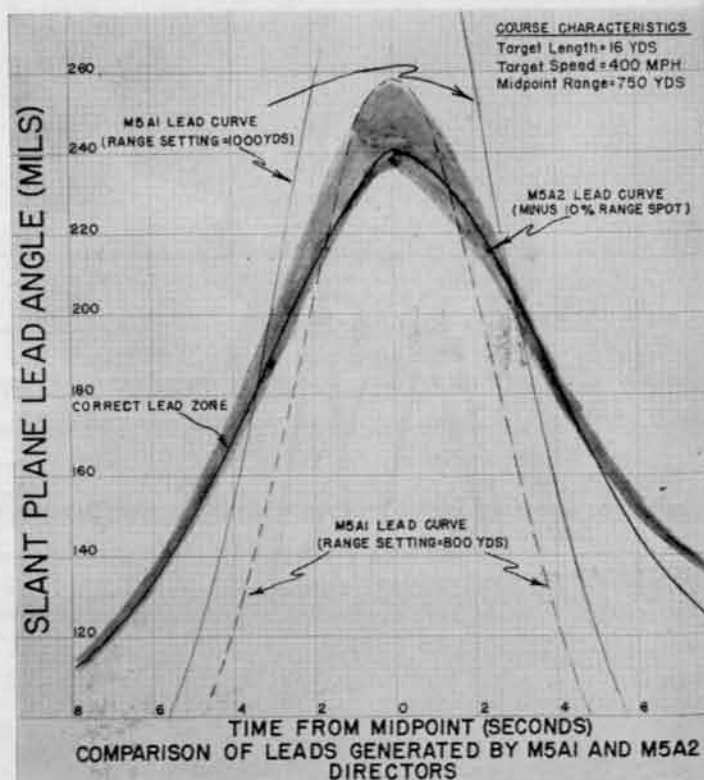


Figure 2

data for thirteen seconds or for 75% of the course. On the other hand, assuming superior range setting operation of the M5A1, it will produce accurate fire for only one or two seconds (depending on the range setting), or from six per cent to twelve per cent of the course.

Roughly then, the M5A2 has an average hit probability for this course which is six to twelve times that for the M5A1 director. Although M5A1 performance improves with respect to the M5A2 as target speeds decrease, the M5A2 should always perform better by a factor of at least three. This difference must be considered as significant insofar as relative accuracy is concerned.

Specification 3. The director is too heavy and bulky to be transported in a fast moving tactical situation: Although this is true, its use as a criticism indicates a misconception of what is generally considered to be the proper employment of the 40mm fire unit. Discussion with officers who served with these units (less directors) as attached division artillery, brings out the fact that much difficulty was encountered in negotiating primitive roads and in moving across country with gun and prime mover. In a significantly large proportion of situations, the gun itself had to be manhandled into the position area either to avoid detection by enemy observers and thus invite artillery fire, or because of the inability of the prime mover to maneuver properly.

It is believed that it should be a generally accepted premise that AAA (AW) units, either organic or attached to infantry or armored divisions, should be self-propelled. The development of the Twin 40mm Gun Motor Carriage M19 met this vital need, and in itself is substantial evidence to support this hypothesis. The important point to stress here is that the 40mm fire unit should *not* be used in such situations. That this is an accepted principle of tactical employment is shown vividly by the composition of the new type field army. In this structure, the AA AW Battalions (Mobile) constitute only a third of the entire AAA (AW) with the army. *ALL* of these are allocated to the AAA brigade at army level. In such a position, their mission would be almost entirely one of air defense in rear areas. Thus they would be located in relatively stable positions, and enjoy the tremendous advantage of highly integrated early warning systems. Therefore, the mobility requirement would be at a minimum. This also applies to standby manning requirements, eliminating entirely the manpower fatigue problem previously discussed. With these considerations in mind, can this specification against the director be accepted as a valid criticism to support its relegation to the scrap pile?

Specification 4. Existing types of computing sights produce equivalent or better accuracy on targets flying at combat speed: Here is the most serious charge confronting the director. Of all the reasons, if this reason alone were true, then the AW director should indeed be discarded. Unfortunately, no factual evidence has been found from World War II experience to provide a sound basis for comparison. Even if such data were available it would be of questionable value since the director, supplemented by the range finder, did not get into action until the very end of the war when few targets were to be seen. No conclusive tests have been conducted since the war by any agency

equipped to do so. Such studies are most certainly in order at this time, and, it is understood, are now being undertaken.

We can, however, draw some reasonable conclusion from the results of student range firings conducted over the past two years at the AA & GM Branch of the Artillery School at Fort Bliss, Texas, and a knowledge of the inherent capabilities and limitations of both fire control devices.

Although no special tests have been completed at the school for the period mentioned, the difference in relative accuracy attained by students using both types of fire control has been significantly apparent in favor of the director. This has been true of both officer and enlisted classes, as well as demonstration firings by school troops.

The accuracy referred to here is based on a comparison of the actual number of hits as observed for each type of fire control rather than on a scoring system in which arbitrary weights are assigned to each sighting device to produce an equivalent score. Director fire control, almost invariably, produces more flag and OQ hits than computing sight fire control. All student classes receive the same amount and type of instruction, supervision, and training before each firing. Even granting the fact that target speeds were relatively low, the results should be generally indicative of relative accuracy.

From a basic understanding of fire control principles, it should be possible to forecast with a fair degree of success, the relative degree of accuracy of these two devices as target speeds increase toward those which might be expected in combat today. Before proceeding to discuss this facet of the problem, a brief description of the Weiss type of computing sight is in order for the purpose of familiarization (Fig. 3).

These instruments are generally known as "Course-Speed" sights in which the operator must introduce an estimate of target speed in MPH and point a metal arrow according to the direction of flight of the aircraft to be engaged. The element through which the target is tracked may be either a reflex unit or a low power telescope depending upon the sight. As the gun pointer tracks the target, the operator makes his settings for the course and speed of the target. These settings, through gearing and linkages, act to move the sighting elements behind the target. As the gun pointer traverses the gun to get the sight-

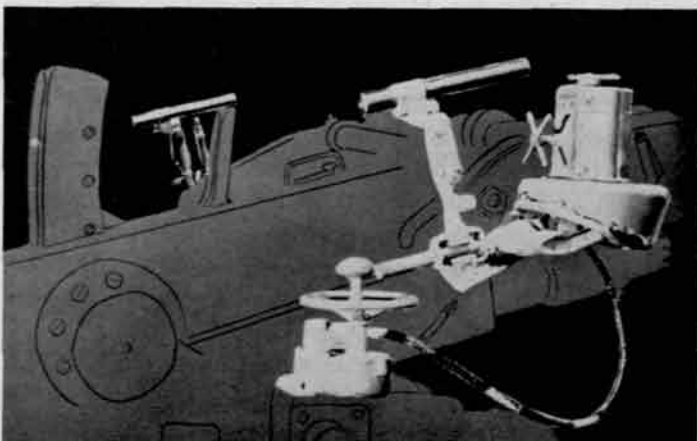


Figure 3—Weiss Computing Sight mounted on 40mm gun.

ing element back on the center of mass of the target, he moves the gun ahead of the target by the amount of the slant plane lead angle. During firing, the sight operator adjusts the arrow and the speed setting as necessary to obtain proper line and lead of shots. These adjustments are based upon his sensings of the tracers with respect to the target.

It is now possible to make some comparison of these two types of AW fire control in the light of their modes of operation. In the use of all Weiss type computing sights, it is a fundamental necessity to observe and adjust fire based on tracer sensings. This is a grave weakness. It is definitely known that this operation will become increasingly difficult, if not impossible, as target speeds increase, primarily because of the reduction in time available for such operations. The problems inherent to the use of tracer reading for adjustment are well known.

The blink of an eye is enough to miss a sensing because the only usable portion of the tracer path is at the target. Visibility is also a limiting factor. It is a most difficult technique to learn. It is true that with increased target speeds, the consequent loss of engagement time will act to reduce the effectiveness of *all* AW sighting devices. However, because effective use of the director does not rely basically on the use of tracer observation for accuracy, it should perform better than a computing sight of the Weiss type in any comparison.

Assuming the correct speed setting and arrow position on the computing sight, a comparison of generated slant plane lead angles over an average course with those of the director shows little difference considering location and duration of flythrough. In theory, efficiency should be comparable; in practice they are not because, with the computing sight, the sight operator must estimate the speed setting and adjust the position of the arrow to obtain line shots based on tracer sensings. The combination of these two major disadvantages should act to put the director far ahead in any test of relative accuracy.

Specification 5. Manpower requirements are excessive: The present Tables of Organization for the AAA AW battalion (mobile) list an aggregate strength of 957 officers and men. The elimination of the director would allow a reduction in strength of four men per fire unit or a saving of 128 men per battalion (13%). Such a saving is not to be dismissed lightly, and is a formidable argument against retaining the director. However, is it sound to compromise effectiveness to attain economy? That, of course, depends upon the degree of effectiveness to be lost. If a loss of 50% effectiveness stemmed from such action, the resultant saving in manpower would not be worth it. However, if the loss were in the neighborhood of 5%, there could be no valid objection to replacement of the director by a computing sight.

The validity of this specification is contingent upon whether or not the preceding one has been sustained plus information as to true relative accuracy. There is no question that the director is the more accurate; whether the difference in accuracy is significant is, not positively known. This question must be answered. It is hoped that the current studies heretofore mentioned will produce them.

Specification 6. The director cannot be maintained and operated in the Arctic as easily as present types of computing sights: This allegation is probably correct insofar as maintenance is concerned. However, the comparative ease, efficiency of operation, and use is a moot question. Answers to this and other vital questions regarding use of fire control in the Arctic should be forthcoming pending results of current testing operations in Alaska.

It should be noted here that the maintenance of the director always presents a greater expenditure of time and effort than that required for computing sights. However, if better accuracy and effectiveness can be expected from the director, is not that extra time and effort worth it?

Consider now the problem of operation of both devices in the Arctic. Both will require the tracking of the target through optics. Manipulation of the controls with bulky hand coverings presents many and varied problems in the operation of both instruments. However, aside from the crew's operational problems, the degree of interference caused by "ice fog" may be, in itself, a limiting factor which will govern the type of fire control to be employed in those regions. (Ice fog is a mist of ice crystals which tend to form at extreme sub-zero temperatures about any source of heat). As a gun is firing, ice fog forms very rapidly around it, cutting down visibility at the gun to a large extent. All of the effects and characteristics of ice fog are not fully known as yet. Reports from Task Force Frigid indicated that it had a serious limiting effect on AW fire control; recent reports have tended to deprecate its effect. If ice fog does prove to be an important consideration, the director, being an off-carriage device, would produce the best results because of its displacement from the gun.

Finally, it is believed that this criticism, even if true, is insufficient cause, in itself, to require elimination of the AW director.

Specification 7. The British have junked the M3 Predictor in favor of on-carriage fire control (The Stiffkey Stick): Does this action by the British call for a similar course here? Perhaps they were actuated by motives other than the belief that the AW director is ineffective. Remember too, that the M3 Predictor, although almost identical to our old M5 director, was not equipped with a device similar to our coincidence type range finder. It is entirely probable that the British action in abandoning their AW director may have been provoked by other considerations, such as maintenance problems, training problems, manpower problems, monetary problems, and special tactical requirements for AW in the United Kingdom.

Specification 8. Target pickup is too difficult for the AW director on high speed aircraft: Consideration of this accusation leads to the general conclusion that target pickup of these aircraft by *any* device will be next to impossible unless adequate early warning is available. In this regard, the target acquisition radar now present at each AW mobile battery headquarters should fill the bill nicely.

If the director crew knows the direction of target approach within a few hundred mils, they can pick the target up in the telescopes many seconds before engagement range is reached, providing reasonable visibility is afforded. At the probable range of pickup, as facilitated by early warn-

ing, the target's angular velocity with respect to the director would be relatively slow and would thus pose no more of a problem for pickup than that encountered on the firing ranges today. This cannot be considered as a criticism applicable to the AW director alone and is, therefore, not a valid argument.

SUMMARY

Those who base their charge on the fact that in many cases the AW directors were left behind in combat are attempting to condemn the instrument on pure circumstantial evidence. This applies also to all who hold up the British action in this matter as a pattern for us to follow. It has been shown that the reasons behind these actions may derive from causes other than a lack of faith in the instrument.

Criticisms based on the lack of mobility are not valid. Units employing director fire control should not normally be used with armor to exploit a breakthrough or to accompany an envelopment. They should not even move with the Infantry division unless required for special situations. Use in relatively stable defenses is their proper role.

The addition of the range finder to the director has improved its effectiveness to a large degree. Proponents of the contention that the range finder has not increased accuracy appreciably should study Fig. 2 and change their minds in a hurry!

No factual data is available as yet on comparative operation in the Arctic. It is believed that Arctic operations are

of a special nature and as such require special equipment. The director should not be required to stand or fall based on Arctic performance alone.

A considerable savings in personnel would result from the discard of the director. This, in itself, cannot be considered a justification for such drastic action. The crux of the entire matter is basically dependent upon the relative accuracy of the two types of fire control under expected conditions of employment. On the basis of field experience, together with a study of respective capabilities and limitations, would appear that the director had a good edge over computing sights in this regard. Studies are currently in progress by research agencies of the government to obtain some concrete answers to this critical question.

The pickup problem on high speed targets is not confined to the AW director, but applies equally to all present AW fire control instruments.

CONCLUSION

It is therefore concluded on the basis of the evidence presented that no consideration should be given to the demand for the scalp of the director at this time. No such action is warranted until new fire control devices are developed, tested, and proven, or at least until it is established through properly planned, controlled, and executed tests that there is no appreciable difference in relative accuracy under expected combat employment between the AW director and the Weiss type of computing sight.

CASE DISMISSED.



JOURNAL HONOR ROLL CRITERIA

1. To qualify for a listing on the JOURNAL Honor Roll, units must submit the names of subscribers and total number of officers assigned to the unit on date of application.
2. Battalions with 80% or more subscribers among the officers assigned to the unit are eligible for listing, provided that the unit consists of not less than 20 officers.
3. Brigades and groups with 90% or more subscribers among the officers assigned to the unit are eligible for listing, provided that the unit consists of not less than seven officers.
4. Units will remain on the Honor Roll for one year even though they fall below the 80% requirement during the year.
5. Lists of subscribers and statement of number of assigned officers must be submitted annually by units in order to remain on the Honor Roll.
6. Battalions with 90% of officers subscribing will qualify for one star placed after the unit's designation on the Honor Roll. Battalions with 100% subscribers will qualify for two stars.
7. Groups and brigades cannot qualify for one star but may qualify for two stars with 100% subscribers.

Winners of the Coast Artillery Association ROTC Medal

Listed below are this year's winners of the United States Coast Artillery Association ROTC Medal. The recipient of this annual award is selected from the students in each of the Coast Artillery Corps Senior ROTC units.

UNIVERSITY OF ALABAMA: Cadet John F. Porter, Jr., age 22, of Birmingham. Cadet Porter served nineteen months in artillery during World War II. He graduates with a BS degree majoring in physics. He is vice president of Sigma Pi Sigma and a member of three other societies. Cadet Porter was designated as a Distinguished Military Student and hopes to make the Regular Army his career.

UNIVERSITY OF CALIFORNIA: Cadet First Sergeant William T. Panttaja, age 20, of Oakland. Cadet Panttaja majors in history, is a member of the varsity football squad, two fraternities, and also anticipates a profession in the Regular Army.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES: Cadet Lieutenant Colonel William C. Black III, who was born in Nebraska and now lives in San Diego. Cadet Black entered UCLA after graduating from Brown Military Academy. His major is political science. He is active in several campus societies and has been designated as a Distinguished Military Student. He plans to accept a Regular Army commission this summer.

UNIVERSITY OF CINCINNATI: Cadet Colonel David Allen Beckner of Cincinnati. Cadet Beckner attained the rank of sergeant while serving eighteen months in the Engineers in World War II, thirteen months of which was overseas. He is a member of the class of 1950 with a BA degree, major field political science. A Distinguished Military Student and member of several clubs and societies, Cadet Beckner seriously considers entering the Regular Army.

THE CITADEL: Cadet Robert Gunning, age 21, of Van Lear, Kentucky. Cadet Gunning has an outstanding record in athletics, YMCA, and the State Baptist Student Union for Sunday School Board of South Carolina. He is a Distinguished Military Student.

UNIVERSITY OF DELAWARE: Cadet William H. Groetzing III, 20, of Havertown, Pennsylvania. Cadet Groetzing is a junior at the School of Engineering, takes an active part in varsity and intermural sports, and several other campus activities.

FLORIDA A & M COLLEGE: Cadet Captain Bennie E. Eubanks, Jr., 23 years old, of St. Augustine. He had service with occupational troops in Germany. Majoring in history, he graduated with honors. His school activities included athletics, dramatics, and other college clubs.

FORDHAM UNIVERSITY: Cadet Captain William F. Branigan, 26, of Fort Lee, New Jersey. Cadet Branigan graduates with a BA degree in Greek. He served in the

Pacific Theater with the Navy during the war. His school activities included Officers' Club, Glee Club, Russian Club and others. A Distinguished Military Graduate. He has accepted a commission in the Regular Army.

GEORGIA INSTITUTE OF TECHNOLOGY: Cadet 2d Lieutenant Herbert Bradshaw, Jr., of Waycross. He is active in athletics and a member of several honorary, academic and social organizations.

HAMPTON INSTITUTE: Cadet Sergeant First Class Charles H. Harrison of Woodville, Virginia. Cadet Harrison, age 23, is a veteran of World War II, having served in the Army. He is majoring in chemistry and takes part in college athletics. He is also a member of Alpha Phi Alpha Fraternity.

UNIVERSITY OF ILLINOIS: Cadet George Don McTaggart of Auburn. Between High School and the University, Cadet McTaggart served with the Navy with some time in China. He is studying ceramic engineering, and is a member of a National Honorary Military Fraternity and the ROTC rifle team.

KANSAS STATE COLLEGE: Cadet Harlan E. Kamm, 21, of Buffalo, Kansas. Cadet Kamm is majoring in civil engineering, is active in Scabbard and Blade and other societies. He is considering a career in the Regular Army.

UNIVERSITY OF MAINE: Cadet Edgar Eugene Gammon, age 20, of Westfield. Cadet Gammon is a junior and is pursuing a course in agricultural engineering. He is active in a number of honorary, social and academic organizations. Last year he received the Junior Medal as the outstanding student of the Basic ROTC Course.

MICHIGAN STATE COLLEGE: Cadet Major Charles C. Bragg. Cadet Bragg is a Distinguished Military Student and a member of the College Flying Club, Alpha Tau Omega, Sigma Delta Psi, and other organizations.

UNIVERSITY OF MINNESOTA: Cadet William R. Hendrickson of Minneapolis. Cadet Hendrickson is a junior in the College of Business Administration. He is an active member of Scabbard and Blade and a first sergeant in the cadet regiment.

MISSISSIPPI STATE COLLEGE: Cadet Sergeant Charles L. Warner, 26, of Pascagoula. Cadet Warner attained the rank of staff sergeant with the Marine Corps in the Pacific during the war. Now he is a junior in the School of Engineering and takes an active part in several campus organizations. A Distinguished Military Student, Cadet Warner is keenly interested in military subjects and hopes to make the Army his career.

UNIVERSITY OF NEW HAMPSHIRE: Cadet First Sergeant Daniel J. Walsh, 25, of Hingham, Massachusetts. Cadet Walsh is a veteran of three and one half years service in the Navy. A member of national and local fraternities, he

will graduate next year with a BS degree in electrical engineering after which he is primarily interested in entering active duty.

UNIVERSITY OF PITTSBURGH: Cadet Jack L. Watkins of Pittsburgh. Cadet Watkins is qualified as a gliderist and parachutist, having seen service with the 82d Airborne Division. He is majoring in political science, is a cadet lieutenant colonel and a Distinguished Military Student. He is a member of several societies and seriously considers the Regular Army as a career.

UNIVERSITY OF PUERTO RICO: (to be published at later date)

UNIVERSITY OF SAN FRANCISCO: Cadet Colonel James Harold Pierce, 22, of San Francisco. Cadet Pierce is the first non-veteran to command the university regiment since the war. He is a member of Scabbard and Blade, Rifle Team, Board of Student Control, and Alpha Sigma Nu.

A & M COLLEGE OF TEXAS: Cadet James A. Warmker, 19, of San Benito. Cadet Warmker is a junior and is majoring in mechanical engineering, has taken part in several cadet activities and has been nominated for designation as a Distinguished Military Student.

TEXAS WESTERN COLLEGE: Cadet First Sergeant John E. Parks of El Paso. Cadet Parks completed the third year of senior ROTC work this June. He is active in many

extracurricular organizations, and is studying business administration in preparation for a course in law.

UTAH STATE AGRICULTURAL COLLEGE: Cadet Colonel Eafston B. Sept of Twin Falls, Idaho. Cadet Sept is a veteran of two years with the Air Force in the European Theater. He takes part in campus activities and has been appointed a Distinguished Military Student. He has accepted a commission in the Regular Army.

VIRGINIA POLYTECHNIC INSTITUTE: Cadet Clyde Jefferson Umphlett, 22, of Suffolk, Virginia. Taking part in such activities as Omicron Delta Kappa, Pershing Rifles, Scabbard and Blade and others, Cadet Umphlett is an outstanding student of his junior class. He has been named cadet colonel of VPI Corps of Cadets for 1950-1951.

WASHINGTON UNIVERSITY: Cadet George A. Jensen of Jennings, Missouri. A veteran, Cadet Jensen served in the Construction Engineers from 1946 to 1948. After an overseas discharge and some civil service in Okinawa, he has become an "A" student in the advanced course of Military Science and Tactics.

UNIVERSITY OF WASHINGTON: Cadet Luther J. Cross, 21, of Grandview, Washington. Cadet Cross came to the University after attending Washington State College for one year. He is majoring in mechanical engineering and is a member of ASME and Scabbard and Blade.



244th AAA Group NYNG Graduates 18 Candidates From Its Own OCS

Standing before the massed battle flags of New York's "Old Ninth," the 244th AAA Group, eighteen graduates of the Group's Officer Candidate School were presented with diplomas by Colonel Winslow Foster, Group Commander. The candidates formed a pool from which vacancies for second lieutenants were filled.

The school, conducted by Major Graham G. Berry, is the second such session to be run by the 244th, the last having been instrumental in filling the then 244th CA Regiment (TD) to full wartime T/O in officer strength in 1940.

Candidates attending the 1949 session took a course of instruction which was closely parallel to the 10-series extension courses administered through The Army General School, and were required to complete these courses as

well. Cooperation of the Department of Extension Courses at Ft. Riley made possible the completion of both courses.

The names of the eighteen graduates are listed below. Those marked with an asterisk have received commissions as second lieutenants Coast Artillery Corps, and performed duty as such during the Field Training period.

*Bruno G. Bechelli	William F. Landers
*William J. Bennet	*Irwin D. Littman
*Gilbert J. Bruneman	*Lawrence A. Nilson
*Joseph A. Cain Jr.	Nathan M. Oberman
*Mauro A. Dell'olio	Anthony M. Puga
Edward R. Feeney	Philip Schachter
*Paul E. Giambertone	Eliot I. Sommer
Elias Josephs	Raymond W. Watson
Irving Kessier	Leonard C. Guinn

KNOW YOUR Fr



The Boeing B-47 "Stratojet" is the Air Force's latest bid for supremacy in the jet-bomber field. Rated at more than six hundred miles an hour with a bomb load of over 20,000 pounds, this plane features a 35° swept-back wing. Its ceiling of over 40,000 feet accentuates the AAA problem of dealing with fast, high level, bombers in this class.

★AIRCRAFT RECOGNITION

Since the close of the war, training in the vital field of aircraft recognition among antiaircraftmen has not kept pace with air developments. The JOURNAL will publish a series of photos and data on new planes in the service of the major western powers.

While photos are not expected to replace model silhouettes, this series is designed as an aid in recognition training.



With a bomb load at reduced range of 84,000 pounds, Co
ten thousand pounds of bombs ten thousand miles at speed
fire power of

endly AIRCRAFT*



Boeing's B-50 is the postwar version of the B-29 although it is considered to be 75 per cent a new plane. Similar in outward appearance to the "Superfortress," its combat range of over 2,300 miles and bomb load of more than 20,000 pounds place it in the intercontinental class.



The B-36 is rated as the world's largest bomber. It can carry a load of 435 miles per hour. It is rated as having the greatest range yet developed.

HEIGHTS OVER BOSTON

By Jerome Kearful

In March, 1776, General George Washington and his American Continentals seized and fortified Dorchester Heights, dominating Boston Harbor, with no show of opposition from the British then occupying Boston. By thus overlooking the axiom that strategically placed shore batteries are more than a match for floating fire power of equal strength, the British lost Boston for the entire course of the Revolutionary War.

After Bunker Hill, General Gage, the British commander, wrote to England that "the trials we have had show the rebels are not the despicable rabble too many have supposed them to be." Benjamin Franklin, also writing to England, said: "Americans will fight. England has lost her colonies for good." At the same time, Washington was taking over command of the patriots who were rising to arms by the thousands throughout the New England countryside. His first task as commander in chief of the military forces of the newly yoked American states was the expulsion of the British from Boston.

The British held the Massachusetts town with both land and sea forces. Lord Howe had succeeded to the command of the 5000 well-equipped regulars in the city after Gage's pyrrhic victory at Bunker Hill. In the harbor, Admiral Shulldham commanded several ships of the Royal Navy. Patriot and Tory, of both of which many remained in the city, feared or hoped that the Americans might never be able to dislodge the formidable British defense.

For several months Washington wisely refrained from all offensive operations. Time was needed to bring some degree of order and discipline into the body of "farmers and schoolteachers" that had assembled to support the American cause. Ammunition, supplies and equipment of all kinds were desperately needed. From a time shortly after Bunker Hill to early March, 1776, Washington's army pressed the siege of Boston (which was largely ineffective so long as the harbor was open), but made no offensive efforts.

Washington has been given great credit for his strategic judgment in the occupation of Dorchester Heights. Plans for the operation were carefully formulated in February, 1776, and put into effect beginning early in March. Washington and his staff agreed that "a previous bombardment and cannonade was expedient and proper, in order to harass the enemy and divert their attention from that quarter."

The diversion from the planned seizure of points on Dorchester Heights succeeded admirably. The American fire caused great alarm and confusion; many of the British were completely unaware that the Continentals possessed mortars and shell. They were surprised that Washington's artillery fire was "well and properly directed." The bombardment began on a Saturday night and continued without pause through the following Sunday and Monday nights. A number of the American shells damaged the British works and inflicted personnel casualties. "Success equal to our most sanguine expectations" was marred by the bursting of five American mortars while being fired.

On Monday night, while the bombardment continued with no slackening of intensity, Washington dispatched a force under Brigadier General Thomas to carry out the occupation of the Heights. The prize was to prove very great, yet Lord Howe and the British, distracted by the constant fire to which they were being subjected, were taken completely off guard and made no effort to oppose Thomas and the Americans. By morning, Washington's men had completed strong defensive works.

By the light of dawn, British ships in the harbor viewed the freshly made American works on the two Dorchester hills with dismay. Lord Howe might have overlooked it, but Admiral Shulldham had not: Dorchester Heights was the key to the control of Boston. Immediately he sent off a messenger to Howe bearing the information that, should the Americans not be dislodged from their positions, he would have no alternative but to withdraw the ships under his command from Boston Harbor. The Americans were not dislodged.

Too late, Howe realized the portentousness of Washington's occupation of Dorchester Heights. The British commander at first planned an attempt to drive the Americans from the Heights and assembled a force for that purpose. "This will be another Bunker Hill," commented a British sergeant. But the British were unwilling to replay the scenario; less so, since it appeared that even such a bloody assault as Bunker Hill might fail completely this time. Howe changed his mind and began plans for an evacuation of the city.

The speed of the British withdrawal was given considerable acceleration when the Americans moved their positions still closer to Boston by occupying a third promontory in Dorchester a few nights later. In their haste to be away, the occupying troops now began loading artillery pieces, military stores and equipment and personnel aboard ship in great confusion. American artillery could have inflicted great damage, but fire was withheld lest the British retaliate by burning the city. Boston Tories who could find seamen to man ships for their escape fled with Lord Howe to Halifax.

After entering the city, Washington reported to John Hancock of the Continental Congress: "It is with the greatest pleasure I inform you that on Sunday last, the 17th, about nine o'clock in the forenoon, the ministerial army evacuated the town of Boston, and that the forces of the United Colonies are now in actual possession thereof. I beg leave to congratulate you, Sir, and the honorable Congress on this happy event." Washington's Quartermaster General soon discovered that the British had left behind stores worth a small fortune to the Continentals.

Washington's engineers proceeded to strengthen the fortifications of Dorchester Heights to the extent that Boston remained safely in American hands during the entire course of the Revolution.

ARMY REORGANIZATION

The Army Organization Act of 1950 has now become law. In general the Act consolidates, revises, or repeals the many laws of the past affecting the army to provide one comprehensive Act in conformity with the Army Organization as it now exists. The Act gives permanent legal status to many changes in organization made during the last nine years under the provisions of Title I of the First War Powers Act of 1941.

The Act does not modify the National Security Act of 1947 as amended (The Unification Act).

It does not change the laws governing the National Guard and the Organized Reserve Corps.

It does not modify the laws pertaining to promotion and retirement.

Such changes as are prescribed do not go into effect until specifically directed by the Secretary of the Army.

FLEXIBILITY

The Army Organization Act provides a much more flexible charter for the Organization of the Army and the Department of the Army than has heretofore been authorized by law. For example, a fundamental departure from previous legislative policy is that earlier statutes prescribed the powers and duties of each of the chiefs of the technical and administrative services, whereas the 1950 Act does not do so. It prescribes only that they shall perform such duties as may from time to time be prescribed by the Secretary of the Army. Earlier statutes prescribing the duties and the powers of the chiefs of services, except those relating to the Judge Advocate General or the Chief of Engineers, are either repealed by the Act, or amended so as to place those powers in and impose those duties upon the Secretary of the Army himself rather than in or upon the chief of service. This gives flexibility to the organization of the Department and is in keeping with the organizational principle advocated by the Hoover Commission that good administration requires that the head of a department of the government be given full authority to organize and control his department, and that separate authorities not be vested by statute in component subordinates.

The Secretary of the Army is given broad authority to prescribe organizational matters throughout the Army Establishment. It is believed that the flexibility provided by the Act will permit the organization of the Army to be kept abreast of developments in the science of warfare and in the moulding of an effective team of land, sea, and air forces; and that it will permit the changes in Army organization that are necessary or desirable incident to mobilization and active military operations. Drastic organizational changes were made at the beginning of both World War I and World War II because the rigidity of earlier laws did not permit the making of changes until the enactment of war powers acts. The flexibility of the new Act should eliminate the necessity for such drastic changes in organiza-

tion in any future similar situation insofar as the internal organization of the Army Establishment is concerned.

BASIC BRANCHES

The Act provides twelve basic branches in the Army, as follows:

Infantry	Quartermaster Corps
Armor	Finance Corps
Artillery	Ordnance Corps
Corps of Engineers	Chemical Corps
Signal Corps	Transportation Corps
Adjutant General's Corps	Military Police Corps

It also provides that the Secretary of the Army may add branches as necessary, and during war may discontinue or consolidate the branches listed above.

The Regular Army officers of the basic branches are appointed in the Army, are assigned to the branch, and are carried on the single promotion list.

SPECIAL BRANCHES

The Act provides special branches, as follows:

The several corps of the Medical Service;
The Judge Advocate General's Corps;
The chaplains.

The Regular Army officers are appointed in the respective special branches and are carried on separate promotion lists.

THE ARTILLERY

Our readers are particularly interested in the provision that "the Artillery shall be a continuation of the Field Artillery and the Coast Artillery Corps." Thus these two branches of the service will soon cease to exist as such when the Secretary of the Army so announces. The details of the implementation are left to the Secretary.

Inquiry at Army Headquarters reveals no proposed changes of a revolutionary nature and little change at all in the immediate future.

The T/O & E for Seacoast Artillery units will be rescinded. All such units have already been converted or disbanded.

The AAA brigades, groups, battalions and operations detachments continue under their present designation and T/O & E. This applies to the Regular Army, the National Guard and the Organized Reserve.

Evidently there will be no material change in the organization or instruction for ROTC units. The attempt made a few years ago to merge the Field Artillery and Anti-aircraft instruction did not meet with approval.

There is no indication of immediate change in the organization or instruction in either the AAA & GM Branch or the Field Artillery Branch of the Artillery School. Actually the instruction in the two branches has already been integrated. Long range plans are under consideration to

provide a higher degree of integration to the end that all Artillery officers in the regular service will get earlier training in both types of artillery.

PERSONNEL ASSIGNMENTS

The Coast Artillery and Field Artillery branches of the Career Management Division in the Adjutant General's Office are already working together and are partially merged. They will probably be completely merged in the future; however, no radical changes in the policies of assignment are contemplated immediately. Eventually, it is contem-

plated that a portion of the Field Artillery officers will be assigned to antiaircraft duties for practical experience; and likewise Antiaircraft officers, to Field Artillery duties.

INSIGNIA

It was predicted that uniform insignia will be prescribed for all of the Artillery, but there was no indication as to what that insignia may be. The Artillery insignia prior to the separation in 1907 was similar to that now used by the Field Artillery. Some progressive officers feel that we should incorporate the guided missile in our new insignia.



Three-Year Training Program Prepared For Army Organized Reserve Corps

Preparation of a three-year training program designed to bring Army Organized Reserve Corps units to the highest possible state of readiness is nearing completion by the staff of General Mark W. Clark, Chief of Army Field Forces at Fort Monroe, Virginia.

In announcing the program General Clark said it will give America "a hard core of highly trained reservists, accustomed to working together, ready for instant mobilization and action in an emergency. This means the end of the 'paper soldier' in our active reserves. We are going to prepare every man for a job."

"Our M-Day plans at the present time call for the Organized Reserve Corps to furnish a high percentage of our service support and combat support units," General Clark stated. "These are the troops we must use in the very first days of war, should we be forced into one."

With the training programs nearly completed, eighteen Army schools of the various arms and services are aiding in the preparation of between 2,000 and 3,000 subject schedules. These are detailed lesson plans covering every minute of the 48 annual two-hour home-station drill periods, and more general directives for 15-day summer training camps.

Each subject schedule will include explanation of the purpose of the training and its objectives, the scope of the subject, and supporting text references down to page and paragraph numbers. Training aids and facilities will be listed so that the instructor will have a detailed guide for his teaching. Tests will be published in a separate annex, and solutions in another. The program covers every one of the 380 different types of reserve units with lessons on subjects ranging from military justice to defense against atomic attack. Women's Army Corps Reserves are completely integrated in the training program. Wacs have hundreds of military occupation specialties and may be assigned to any service-type unit. There are more than 200

such types in the reserve program.

Writing teams are preparing tables of training equipment for use in conjunction with the training programs. These tables allot to reserve units the materials they need to carry on both training and administrative functions.

Charts, films, film strips, bridge models and many other visual aids for classroom work will be available, as will weapons, tanks, engines, tools, typewriters, kitchen equipment, and other items needed for practice and familiarization.

"Reserve units will not be fully equipped," it was said, "but they will be supplied with the essentials they should have for complete training purposes."

"Ordnance maintenance companies, for example, will have samples of the vehicles and weapons it is their responsibility to keep in shape. Signal companies will have partial allotments of radios, telephones and other communications equipment with which they work. Artillery units will have appropriate weapons, plus communications and fire-control equipment."

"We are emphasizing the cadre plan, that is, the intensive training and qualification of specialists within a unit in key positions so that the unit may be expanded to full strength with untrained or partially trained personnel, and go into action with a minimum of lost time."

The Army Reserve training program meshes with the over-all reorganization plan for Reserves announced by the Department of the Army last April. This plan provides that all reserve units must attain at least cadre strength within prescribed time limits and then be permitted to progress toward fully organized status as funds are made available.

Training programs began going out to unit commanders in July. All are expected to be distributed prior to September 1, when the program is to start. Subject schedules will follow training programs as soon as possible.

The Coast Artillery Corps

The Army Organization Act of 1950 brings to a close the history of the Coast Artillery Corps. This will be announced soon by Department of the Army General Orders now under preparation. We delve into the *Journal* files for a brief resume of that history.

This history began with General Orders 24, issued by the War Department on February 2, 1907: "Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the artillery of the United States Army shall consist of the Chief of Artillery, the coast artillery and the field artillery . . . That the Chief of Artillery shall cease to exercise supervision over the field artillery and shall be designated as the Chief of Coast Artillery . . . That the Chief of Coast Artillery shall be an additional member of the General Staff Corps . . . That the coast artillery is the artillery charged with the care and use of fixed and movable elements of land and coast fortifications, including the submarine mine and torpedo defenses . . . That the coast artillery shall constitute a corps." The act further provided that the chief appointed to this new corps should have the rank, pay and allowances of a brigadier general (later, a major general); that the commissioned personnel should consist of fourteen colonels, fourteen lieutenant colonels, forty-two majors, and two hundred and ten each of captains, first lieutenants and second lieutenants, all to be permanently assigned to the Coast Artillery Corps by the president "according to special aptitude qualifications and agreeably to individual preference, so far as may be practicable and for the good of the service." To this total of 700 officers were added 19,321 noncommissioned officers and privates, all to be divided into one hundred and seventy companies and fourteen bands.

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The infant corps was soon a flourishing adult under its first Chief, Major General Arthur Murray.

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The Board of Artillery became the Coast Artillery Board; the Artillery School at Monroe became the Coast Artillery School with new buildings, a personnel entirely exempt from post duties, and the return of the mine school from Fort Totten. This submarine interest received generous emphasis from the Corps of Engineers which through the Quartermaster Corps delivered to the Coast Artillery its first mine planter.

* * * * *

The Military Academy at West Point at once made a place for Coast Artillery in its curriculum, and Superintendent Hugh Scott gave the new course an enthusiastic backing that was considerably more than academic.

* * * * *

The succeeding years found the Coast Artillery Corps continuing in a tradition of self-improvement in its own

field of endeavor against the emergencies of a future that became a sternly real present in 1917.

In June of that year the War Department formed the First Expeditionary Brigade of Coast Artillery, for service with heavy mobile guns. This outfit, recruited by drafts upon many Coast Artillery garrisons, went promptly overseas and in September arrived at Mailly-le-Camp (Aube), France, where was established the Headquarters of the American Railway Artillery Reserve.

By the start of '18 the Coast Artillery had undertaken to supply all the Army and some of the Corps Artillery personnel for the A. E. F. Their matériel included the French 155 G. P. F. guns, British 8-inch and 9.2-inch howitzers, 12-inch railway guns, and some American 5-inch and 6-inch coast defense rifles oddly set on provisional wheeled mounts; the wheels of these implausible carriages were of cast iron some five feet in diameter, traversing was accomplished by swinging the trail, the recoil was absorbed by two inclined wooden tracks up which the wheels rolled, and the accuracy of the pieces was such that a shell might fall anywhere within half a mile of where it was aimed. In addition, the CAC took over the trench mortar battalions and the newly invented arm charged with the responsibility of attempting to shoot down enemy airplanes, called anti-aircraft artillery.

* * * * *

Incisive American interest in antiaircraft artillery began with an urgent request by General Pershing to the War Department that AAA units be formed for immediate service in France. As a consequence, the Secretary of War dispatched a memorandum on 1 October 1917 to the Chief of Staff which contained the following:

"1. The Secretary of War directs that there be organized from the regular Coast Artillery Corps the following units for service in France.

(A) One antiaircraft battalion organized as per tables 107 and 108, Series B, Tables of Organization.

(B) Four antiaircraft companies organized as per table 308 of Series C, Tables of Organization.

"2. One company of each of the above types will be prepared to go to France so as to arrive not later than November 1, 1917 . . . The necessary arrangements will be made by the Chief of Coast Artillery for the departure of the troops . . ."

* * * * *

Upon the arrival, the AAA units were placed under the supervision of a Chief of AAA Service, AEF, who conducted inspections and made recommendations, concerning their employment to GHQ, AEF. Their training was all cen-

tralized. General Order No. 46, dated October 10, 1917, of GHQ, AEF, established The Antiaircraft School, AEF, at Langres, France, Brigadier General James A. Shipton, Commandant. Instruction was given by experienced Allied instructors utilizing French and British matériel.

From this meager beginning, sprouted the antiaircraft organization as it exists today.

* * * * *

Back home the Coast Artillery School at Fort Monroe became a heavy artillery school. The Officers' Training Camp flourished. Soon all officers were studying translations of French artillery manuals. A training center for heavy artillery was established at Camp Eustis, Virginia, and the Coast Defense stations were engaged in the activation and training of new units for service in France.

* * * * *

After the war the Coast Artillery retained the tractor drawn and railway artillery missions, but only for the harbor defenses. Meanwhile the Corps undertook the full antiaircraft artillery mission for the army. Beginning with World War I equipment, a program was soon under way for the development and improvement of matériel, techniques and tactics. With the development of air power and with the strides made in increasing antiaircraft effectiveness the Antiaircraft mission took on primary importance.

When Hitler's troops marched into Poland in 1939, the Regular Army Antiaircraft Artillery consisted of two regiments on foreign duty and five skeleton regiments in the States. Supplementing this strength there were a number of excellent National Guard regiments and an enthusiastic group of officers in the Organized Reserve.

Rapid expansion began. The skeleton regiments met heavy calls for cadres overseas and at home, and then promptly expanded to full strength regiments. The Or-

ganized Reserve furnished the officer requirements.

By the fall of 1940 and early 1941 National Guard units were ordered to active duty.

Training centers and replacement training centers were established throughout the country.

Harbor defense units met calls for AAA cadres and also carried out an expansion program of their own.

During 1940 and 1941 many AAA and harbor defense units were moved to overseas bases. Immediately after 7 December, 1941, all Coast Artillery units moved to defensive positions, except for a few units for whom weapons were not available.

In March, 1942, the expansion and training program in the training centers began again. By 1943 the Corps had reached a strength of eighty regiments and four hundred separate battalions.

Under the Army reorganization in March, 1942, the offices of all of the Chiefs of combat arms were vacated, and their functions in training and development passed to the Commanding General, Army Ground Forces.

Major General Joseph A. Green, then serving as the last Chief of Coast Artillery, was assigned as Commanding General, The Antiaircraft Command, in which capacity he directed the training and expansion activities of the Antiaircraft Artillery during the war.

* * * * *

Throughout its history the Coast Artillery Corps welcomed the assignment of Field Artillery missions, and met such responsibility with confidence and enthusiasm. With its readers the JOURNAL welcomes this opportunity to associate more closely with our brothers in arms, the Field Artillerymen, and to share their rich traditions. With its readers the JOURNAL recognizes the unification in one Artillery as a move toward greater strength and flexibility in national defense. Relying on the versatility of Artillerymen the JOURNAL will favor a strong unification.



Special AAA Texts Redesignated

The following special texts published by the AA & GM Branch, The Artillery School have been redesignated in accordance with SR 310-15-1 and are currently available to authorized military personnel at the Fort Bliss Book Store:

<i>Original Number</i>	<i>New Number</i>	<i>Title</i>
AA & GM-1	ST 44-150	An introduction to Guided Missiles.
AA & GM-2	ST 44-260-1	Flak Analysis.
AA & GM-3	ST 44-4-1	Heavy Antiaircraft Gunnery and Fire Control.
AA & GM-4	ST 44-4-2	Employment of Heavy AAA in an AA Defense.
AA & GM-5	ST 44-38-1	Operation of M-9 Type Director Equipment.

The latest publication of the School is ST 44-151, Heavy Antiaircraft Artillery Material. It was prepared by the Department of Gunnery and published in May. This, and other special texts are under a restricted classification.



Loading AAA equipment, the 4th AAA Battalion fly to Exercise "Swarmen."

ACTIVITIES OF 35th AAA BRIGADE

The 35th AAA Brigade was activated on November 20, 1942, at Camp Stewart, Georgia, under the command of Brigadier General Rupert E. Starr. Its overseas operations carried it across North Africa to Salerno, Anzio, through Southern France, Central Europe and into the Rhineland. After participation in the North Africa and Salerno campaigns, General Starr was relieved by Brigadier General (now Major General) Aaron Bradshaw, Jr. The brigade next participated in the Anzio campaign, where a total of 204 enemy aircraft were blasted from the skies by AAA fire. On April 1, 1944, General Bradshaw was relieved by Brigadier General James R. Townsend. The brigade next participated in the battle for Rome where AAA was used as an offensive weapon on an unprecedented scale. The brigade next provided AAA defense for beach landings in Southern France and moved on to participate in the Southern France, Central Europe, and Rhineland campaigns. General Townsend continued in command until 25 November 1945 when the brigade was deactivated at Camp Kilmer, N. J. Throughout the brigade's overseas operation, units of the brigade were credited with 406 planes definitely destroyed and 286 planes probably destroyed.

The 35th AAA Brigade was reactivated on 1 November

1948 at Fort Bliss, Texas under the command of Brigadier General Robert W. Berry, who remains in command today. At Fort Bliss the brigade supervised the activation of four AAA groups and sixteen AAA battalions, trained two groups and eight AAA battalions, and supervised the rail loading and preparation for rail movement of fourteen AAA battalions.

After detailed planning and preparation of an area for occupancy at Ft. Geo. G. Meade by a brigade advance detachment, the brigade was transferred to this station on 20 February 1950. Attached to the brigade were the 19th AAA Group under command of Colonel George R. Carey; the 4th AAA AW Battalion (Mbl) under command of Lt. Col. Ernest L. Bush; the 39th AAA AW Battalion (Mbl) under command of Lt. Col. Edward T. Ashworth; the 70th AAA Gun Battalion (90mm) under command of Lt. Col. Francis G. Gregory; the 75th AAA Gun Battalion (120mm) under command of Lt. Col. John F. Ballentine; the 503rd AAA Operations Detachment under command of 1st Lt. Ivan C. Albrow; and the 6th and 8th Signal Radar Maintenance Units.

Early this spring, units of the brigade received air transportability training in preparation for participation in Exercise "SWARMER." Units of the brigade which partic-

ipated in the "SWARMER" maneuver were: 19th AAA Group, 4th AAA AW Battalion, 39th AAA AW Battalion, 70th AAA Gun Battalion and the 503rd AAA Operations Detachment. The group headquarters and the operations detachment were administratively under the Carolina Base Section and operationally under the Tactical Air Force. The operations detachment worked with the tactical air control center at Camp Mackall receiving early warning information which it relayed to the 39th AAA AW Battalion defending the Greenville, S. C. Air Force Base and the 4th AAA AW Battalion defending installations at camp Mackall, N. C. Later in the problem the entire 39th AAA AW Battalion was airlifted one hundred and forty-five miles into the Fort Bragg area which was surrounded by Aggressor units throughout the problem. Their mission was to provide AW protection for the Pope Air Force Base. A portion of the 4th AAA AW Battalion was also airlifted to the same area when the maneuver ended. The 70th Gun Battalion functioned as Aggressor troops of the infantry, field artillery, and antiaircraft arms during the maneuver.

Meanwhile at Fort Meade, final arrangements were completed for establishing antiaircraft artillery firing ranges in the vicinity of Bethany Beach and Fort Miles, Delaware. These are two excellent ranges—one for guns, the other for automatic weapons firing. Inasmuch as firing is conducted over the Atlantic Ocean, unusual safety precautions are taken to warn fishermen and operators of other vessels in the area. A "Notice to Mariners" of proposed firings is sent out and local radio stations broadcast this information. Aircraft patrols around the impact area warn vessels by flying over them at a low altitude if they are approaching the danger area. Radar sets scan air and sea to detect aircraft or vessels which are approaching the firing area. In addition, regulation safety measures are enforced.

The 75th AAA Gun Battalion fired a 120mm gun target practice at the Ft. Miles range while other units of the brigade were participating in the Swarmer Operations. Upon return of the other units the 70th AAA Gun Battalion (90mm), 4th and 39th AAA Automatic Weapons Bat-

talions fired target practice at the Ft. Miles and Bethany Beach ranges. Excellent tow target aircraft service was furnished by the Air National Guard for these firings.

During the summer months of June, July and August brigade units are scattered—units being located at Fort Meade, Md.; Bethany Beach, Del.; Camp Perry, Ohio—training ROTC, ORC, and National Guard units. In addition AAA instruction teams have been sent from the brigade to Camp Edwards, Mass.; Indiantown Gap Military Reservation, Pa.; and to Camp Pickett, Va.

Upon the completion of summer training and a regathering of the units at Fort Meade, all elements of the brigade will participate in infantry training, small arms training, and AAA firing practice. Afterwards the brigade will engage in Exercise "Metro," an antiaircraft exercise on defense of a large city. This will be the first exercise of its kind since the conclusion of the war.

At Fort Meade the brigade and attached units are housed comfortably in theater of mobilization type buildings. There is not adequate housing on the post for married officers and enlisted men, but no trouble has been experienced in finding adequate housing off the post in Glen Burnie or Laurel, Md. Average rentals off post are \$90.00 for three-bedroom house or apartments, unfurnished, plus utilities in separate houses; \$85.00 for two-bedroom apartments, unfurnished.

Post activities are numerous. Athletic activities and facilities open to all are: Swimming, golf, tennis, baseball, bowling are but a few of the summer sports conducted. There are three service clubs for enlisted men which feature a variety of entertainment and recreation; in addition, the cities of Washington, D. C. and Baltimore, Md., both twenty miles from the post provide a great variety of sporting, cultural and entertainment facilities.

Relationships between units on the post are excellent. In addition to the brigade there are several Second Army service and technical units and the Third Armored Cavalry Regiment stationed at Fort Meade. Competition in athletic and military activities is keen.



ROTC Trains At Bliss

With 233 cadets in attendance, the ROTC Summer Camp at Fort Bliss opened June 19 for six weeks' training in antiaircraft artillery and leader-development.

The cadets represent ROTC units in seven colleges and universities of the Fourth, Fifth, and Sixth Army areas. They are from Texas Agricultural and Mechanical College, Texas Western College, Kansas State College, University of California (at Berkeley), University of San Francisco, University of Washington, and Utah State Agricultural College.

Practical work on 90-millimeter and 40-millimeter antiair-

craft weapons and the carbine were among the subjects featured on the program which closed July 28.

The ROTC Cadets are advanced-course students from their respective schools. Of the total number, 101 are veterans of World War II. Most of these were overseas during combat operations. Thirty cadets are former sailors and 15 are former airmen.

Major General J. L. Homer, Commanding General of Fort Bliss, is ROTC Camp Commander, with Col. A. J. Lepping as Deputy Camp Commander in direct charge of activities.

The 65th AAA Group, Bulwark Of Canal Zone Antiaircraft Defense

By Capt. S. J. Verga, 1st Lt. J. R. Landress and SFC Don Hatt

The 65th AAA Group traces its history from "Gray's Battery" which served during the Revolutionary War, up through the 1st and the 4th Coast Artillery Regiments to 1923 when Congress authorized the formation of the 65th Coast Artillery Regiment (Antiaircraft) which was activated in the Canal Zone.

Following the depression of 1929 the Regiment was deactivated, and its units reverted to the 1st and 4th C. A. Regiments.

In 1939, the 65th AAA Regiment was reactivated in Fort Winfield Scott, California; moved to Camp Haan in 1941 and from there into the antiaircraft defenses of Los Angeles. In 1943 it was converted to a group and participated in the Kiska campaign. In 1945 the Group returned from Alaska to the States where it remained inactive until in 1947 the 65th AAA Group was designated to take over all of the functions of the former antiaircraft elements of the Coast Artillery Command, Panama Canal Department.

The Group is now stationed at Fort Clayton with Colonel Sanford J. Goodman in command.

The Group consists of two composite battalions. One is the 903d AAA Automatic Weapons Battalion (SP), commanded by Lt. Col. C. H. Armstrong, Jr.; the other is the 764th AAA Gun Battalion commanded by Lt. Col. T. M. Lerner.

One hundred years before the Pilgrims landed at Plymouth, the Isthmus of Panama had become the "Crossroads of the World." A cobblestone highway built by slave labor connected the Atlantic and Pacific Oceans.

It was to the Atlantic side of the Isthmus that the treasure of the New World was transported by pack mules. Here it was stored until the "Gold Fleet" made its annual call, bringing in new colonists, adventurers, and products of the Old World. In return, the "Gold Fleet" carried back to Spain the treasure taken from the west coasts of South and North America. Since those days the Atlantic side has been known as the "Gold Coast."

For the U. S. this "Gold Coast" is appropriately named, for truly it is so, since the Atlantic Ocean (Caribbean Sea, actually) entrance to the Panama Canal is located here. The lives, money and time saved over the years through the use of the Canal, by far exceed the total of the fabulous treasure for which the land was valued in the days of the Dons.

Cristobal is in the Canal Zone and is patterned after a small American town, under the same standards of appearance, sanitation and available facilities. Everything is owned by the U. S. Government including the restaurants, commissaries, movies, gas stations and hotel, with military

personnel enjoying the same privileges as the civilian government employees. Everything bought in Cristobal is tax free, in fact all income earned in the Canal Zone is tax free.

Colon is the counterpart of Cristobal, but is under the jurisdiction of the Republic of Panama, with only an invisible line marking the boundary between the two towns. Many fine objects for the home may be purchased here for a considerable saving over the U. S. prices. These include silverware, china, jewelry, linens, perfumes and furniture. In addition, many Stateside services and products are available as well as local and foreign imports.

Colon is also the entertainment center for the "Gold Coast," boasting many quaint night clubs, occasional Bull Fights and other diversions as might be expected. There are in addition, many cultural activities; chamber music, symphonies, clay modeling and oil painting.

The town, particularly the older parts, is typically European and though its sanitation doesn't compare with Cristobal, many military personnel have lived there with their families during times when housing was scarce on the post.

All housing in the Canal Zone is available to military personnel when vacancies exist. However, at present there



An "RCAT" plane takes off as Launching Chief Sgt. Frank Stein pulls the release pin on the catapult. For target practice the 65th Group sends these planes aloft to circle and dip at the Controller's bidding while antiaircraft guns try to bring them down. (U. S. Army photo.)

is no post housing shortage on the Atlantic side of the Isthmus.

All of the Atlantic side communities have grade schools. The High School is located in New Cristobal. All institutions have the same standards as the Stateside schools. For higher education, there is a Junior College located in the city of Balboa, on the Pacific Side.

Socially, in addition to the usual post activities, there are to be found in Cristobal and Colon, many of the well known clubs, fraternities, and societies such as the Elks, different veterans organizations, Knights of Columbus, Lions, Masons, Rotary, and many others.

In reference to post activities, the same are to be found here as in the States; Officers clubs, NCO clubs, service clubs, a golf club and two beautiful tile swimming pools, one each for adults and children. The Army and Air Force Exchange (PX), the Commissary, and even telephone service to any place in the world, are to be found on our post or in the Canal Zone.

Our relation with adjacent units is cordial and comradely, since we train together for our common role in the protection of the Canal Zone and its borders.

At the present time a period of jungle training is in progress, including alerts and occupation of positions. These periods are made realistic with the cooperation of the Air Force and Navy Carriers, whenever they enter the Canal Zone area.

For AAA, as well as AMTB or seacoast firing, the firing point at Galeta is used. This point is approximately seven miles from Fort Davis and faces a little-used sea area from an unpopulated reservation.

It is certain, that if nothing else makes duty on the "Gold Coast" popular, the availability of quarters will. At the present time there are numerous quarters available on the post for married NCOs of grades 5, 6, and 7, as well as for officers. Quarters are of the concrete type and are fairly modern. Many NCOs and officers assigned to the Atlantic Side have been getting coordinated travel to this command. In addition to quarters on the post, many are now available in the surrounding Canal Zone Communities. These latter rent from nineteen to thirty dollars a month. Housing for Enlisted Men without dependents is as good, if not better than Stateside, for our barracks are of modern concrete construction.

The battalion has an excellent firing range for 90mm and 120mm at Flamenco Island, reached by a paved causeway. The range for M-16 and 40mm is on Perico. The ranges are so situated that adequate field of fire is obtained for training with Radar and M-9 and 10 directors.

Waterborne and airborne target practice is available. Radio controlled planes are furnished by the Group's RCAT Detachment for 40mm and M-16 practice. The battalion maintains a modern, well landscaped skeet range.

Small arms ranges are within easy reach of the area and are maintained for use of all troops in the Pacific Area by Pacific Sector, USARCARIB.

For training of officers and NCOs there are the USARCARIB leadership schools at Fort Gulick. Adequate schools are available for training in food service, vehicle operation, mechanics, clerical and other Army fields.

Some quarters are available for all married officers on one of the Pacific Sector posts within a few minutes drive of Fort Clayton. A large percentage of married NCOs are in Army housing or quarters made available for Army use by the Governor of The Panama Canal.

Fort Clayton is well equipped with two movies, a quarter-million dollar swimming pool, a golf course, several ball diamonds, PX, garage, service club, library, "5-6-7" club, four restaurants, officer and NCO Clubs.

A well rounded athletic program continues throughout the year, with all post units participating. The competition is keen, indicative of the good morale that exists within the entire USARCARIB. Housekeeping details for the post are handled by all units working harmoniously together.

Also located in Fort Clayton is an Education Center. This institution is operated by the 65th Group for the Pacific Area troops and it offers facilities for enrollment in correspondence courses, university extension courses, off and on duty USAFI classes of all kinds and includes spoken Spanish taught by Spanish speaking instructors.

It has proved to be so popular that twice it has had to expand its walls to contain service personnel and their dependents.

Churches of nearly all faiths can be found throughout the Canal Zone and Panama. From the Post Chapel, to Panama's famous "Church of the Golden Altar," the faithful will find many havens of worship.

Three miles from Fort Clayton is the Canal Zone City of Balboa. Here is a complete government operated school system, shopping centers with prices usually lower than Stateside, many restaurants, cafeterias, garages and a beautiful new air conditioned theater showing first run pictures. There are many clubs pleasing to servicemen which offer a variety of free services.

Two miles farther on, Balboa melts imperceptibly into the City of Panama. Here there are numberless night clubs and cabarets which cater to the discriminating as well as the casual pleasure seeker.

The City and Republic of Panama are rich in historical lore and serve as a magnet drawing servicemen farther and farther into the interior, where they seek landmarks of the centuries-old civilizations that have risen and perished in Central America.

Ask any old soldier and he will tell you that you have not served, if you haven't had at least one tour of duty in the Canal Zone.



AAA ACTIVITIES AT FORT SHERIDAN, ILL.

That oft-spoken phrase of "Tenting on the old Camp ground" is a familiar one to the "Kannoneers" of the 5th AAA Battalion. The "Kannoneers" took in stride their field exercise and firing training from April 27 to May 10, 1950, at Camp Haven, Wisconsin.

The field exercise and firing practice completed the battalion's training program which was divided into three phases; advanced individual, basic unit and field exercise and firing.

It was also the final test and climax of many months of intensive classroom work, gun drills, dry runs on the equipment and target practice exercises. This exercise proved the value of instructional methods used in indoor and outdoor classes, determined how well enlisted personnel were trained in their basic and organic weapons, increased their knowledge and application of field sanitation and hygiene, and showed them the importance of the care of clothing and equipment. The firing was a criterion for the commanding officer to determine the ability, knowledge and skill of each officer and enlisted man to perform his duty and to determine the state of training of the organization for its primary mission.

In preparation for this phase the unit had completed a rigid training schedule of 21 weeks with emphasis on individual and unit artillery training. Included in this program was an officers school in basic antiaircraft artillery as a refresher course for CAC officers and an orientation course for those of other branches assigned to this organization.

The "Kannoneers," moved by motor convoy to Camp Haven on 27 April 1950, set up camp, emplaced their weapons on the firing line and began firing at the first towed sleeve target at 0800 hours the next morning.

Camp Haven, the little tent city and firing range for AAA units in this area, is approximately 126 miles north of Fort Sheridan, Illinois and near Sheboygan, Wisconsin. The camp is situated on the shore of Lake Michigan and is large enough for AA weapons to be emplaced in simulated combat position and for troops to live under simulated combat conditions.

Weather permitting, firing was conducted each morning and afternoon and for many days this post echoed and re-echoed to the din of many guns and the bustling activity of the "Kannoneers."

The firing was divided into two phases: the service practice and the record practice. The service practice was conducted according to Army Field Force Training Test No. 44-5, dtd 15 July 1948, with one exception; all gun crews fired instead of the required 25%.

Two battalion record sections, consisting of four men each, were trained and utilized as scoring details for this firing period.

During service practice each AW gun section fired three courses using the director, two courses with the speed ring

sight, two courses with the computing sight and four machine-gun courses.

On the record practice firing each lettered battery was required by the Department of the Army Technical Manual No. 44-234, February 1950, to fire seven sections. Three 40mm sections fired with director control, two sections with speed ring sight and two with computing sight.

For their first time approximately 150 recruits participated in the target practices. Also they were well initiated in field service by the end of the period.

During the entire period in the field the morale and *esprit de corps* of enlisted personnel were high and all phases of the firing practice were performed in an excellent manner. Firing was completed 9 May 1950.

An interesting experience for everyone was the 60 to 80 m.p.h. freak windstorm which the battalion was subjected to for more than twenty-four hours.

Approximately 35 tents were leveled by the storm, and momentary gusts, ranging up to 100 miles per hour, ripped tents as if made of paper. When damage was surveyed the battalion had lost four mess hall tents, four kitchen tents, supply tents and many rows of squad tents used by men as sleeping quarters.

At one time the force of the wind was so great that it toppled the heavily reinforced timber observation tower and shifted it from its concrete moorings.

The 5th AAA AW Battalion (M), commanded by Lt. Col. Charles H. Blumenfeld, traces its lineage as an organization from World War I when it was activated as the 67th Coast Artillery Regiment in May 1918. Decorated for participating in campaigns in Africa, Italy, France and Germany during World Wars I and II, the 5th proudly displays seven battle streamers with its colors.

In December, 1945, the battalion was inactivated, but four years later, in January, 1949, it was activated again at Fort Bliss, Texas as a regular Army unit.

In October 1949, for the first real test as a new organization, the "Kannoneers" achieved one of the highest ratings ever awarded an automatic weapons battalion for participation in an Army Field Force Exercise.

Having moved to Fort Sheridan in January, 1950, the organization occupies an area in the southeastern sector of the post on the west shore of Lake Michigan.

The troop housing area includes 24 two-story temporary type troop barracks, the battalion headquarters and BSO building, a chapel, a consolidated troop mess building (single-story wing type) with modern kitchen equipment, two battalion classrooms each large enough to accommodate all personnel of a battery, a medical detachment building and a parking area.

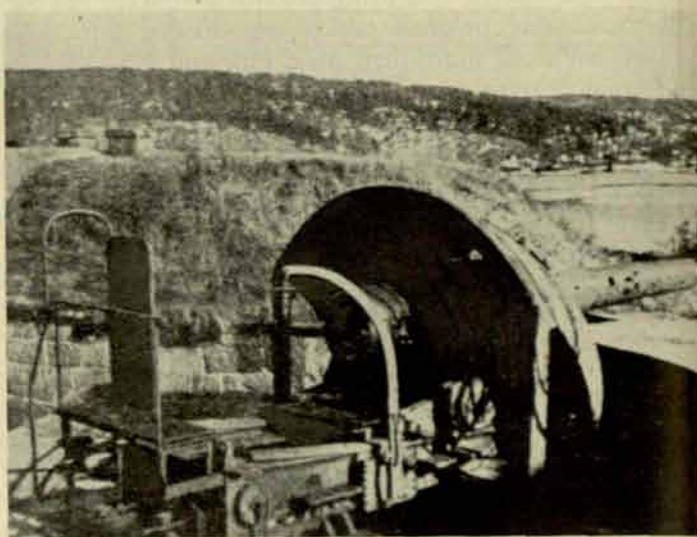
Although the 5th Battalion is not one of the oldest organizations in the U.S. Army its traditions and accomplishments are symbolic of a service that has served its country honorably and well.

The Fight For Oscarsborg

By Lieutenant Colonel Virgil M. Kimm, CAC

During the early morning hours of 9 April 1940 the Norwegian Commander peered through the mist and rising fog. There, breaking through the fog at point-blank range of less than 1500 yards was the German column headed by the Bluecher, followed by the Luetzow (ex-Deutschland), the Emden and several smaller vessels. "Target, Drobak, Main Battery, Leading ship—Commence Firing." Thus did war come to Oscarsborg, guardian of the sea approaches to Oslo, Capital of Norway.

On 8 April 1940, the Oscarsborg Garrison had received reinforcements in the form of some 300 recruits. Prospects for the Garrison looked bright. But early on the morning of 9 April, at 0030 hours to be exact, report was received of action between Norwegian patrol boats and warships of unknown nationality taking place in outer Oslofjord. At 0330 hours, another message was received to the effect that a large number of warships had passed Filtvet, some ten miles away. Immediately, all batteries were placed on full alert status. Yesterday's recruits were ordered into the shelters away from harm, leaving the regular troops free to function without panic or confusion. At 0420 hours, the Bluecher was recognized and the Fortress opened fire with the main 28cm battery. Fog and mist prevented use of the fire control system, so the Norwegian gunners were forced to resort to Case I methods. At the point-blank range of less than 1500 yards (Germans say 700 meters) the Norwegians just couldn't miss. The first salvo scored two hits, the first of which penetrated the command bridge. The second round hit the main deck causing personnel casualties. The 155mm batteries at Husvik and Drobak, on the opposite side of the fjord, joined in the fight. At this point, the rest of the German Flotilla withdrew down the fjord



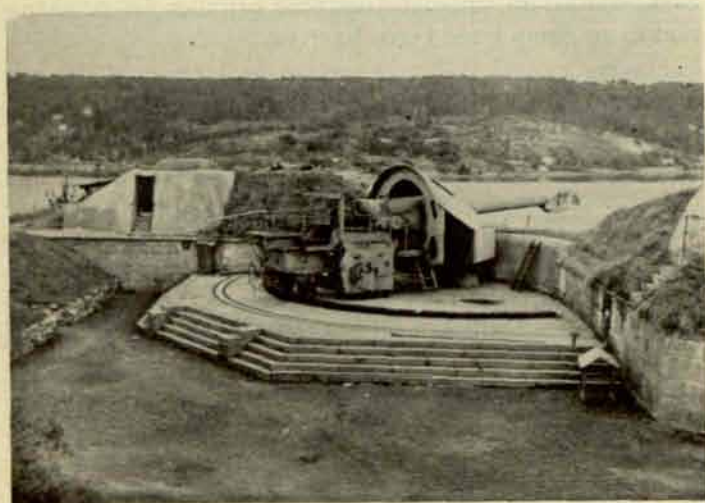
First rifled gun made by Krupp (serial No. 1) looking across Oslofjord toward Drobak. Note damage to gun barrel caused by fire from Blücher's guns.

in order to land troops at points lower down for land attacks against Oscarsborg, leaving the Bluecher to fight it out alone.

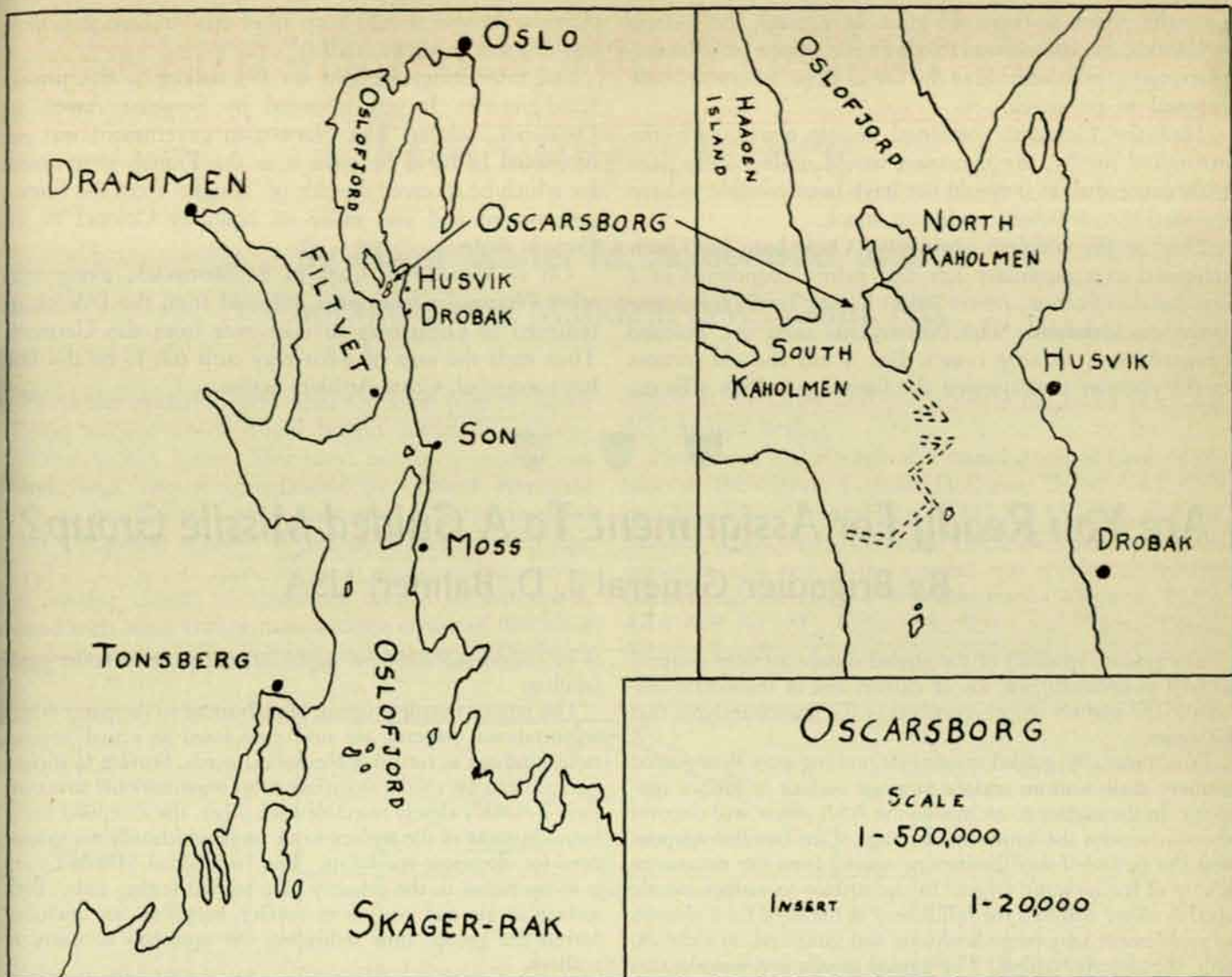
A hit on an airplane hangar on the deck of the Bluecher started a fire amongst some gasoline drums. After a heavy explosion, the ship was enveloped by heavy smoke. During all this time the crippled Bluecher continued on her course in an attempted run-by to reach Oslo. Just at the point where the German commander perhaps breathed a sigh of relief in the belief that he might be going to make it, the torpedo battery ended his last hopes with two torpedoes into the Bluecher's side. A dead hulk, the Bluecher listed heavily to port and after drifting a short distance, rolled over and sank, carrying down with her, besides the crew, the Military Government and Garrison Regiment for Oslo, about 2000 in all. German reports say some 600 men reached land from the Bluecher, but Norwegian observers say that not more than 40 escaped. A German report shows that the initial German garrison for Oscarsborg consisted of 35 men from the sunken Bluecher. Another German report states that the Bluecher's only usable lifeboat was used to save the wounded. German losses were undoubtedly heavy.

The sinking of the Bluecher ended the early phase of the action against Oscarsborg. Little damage was done to the Fortress. Norwegians say the Germans fired everything they had against the Fortress, including small arms. Damage was negligible. There were no casualties. The Garrison resumed its normal alert status and had breakfast.

At 0930 hours, German aircraft, about ten in number,



View of Oslofjord from Main Battery, showing one of the guns that engaged the Blücher on April 9, 1940.



appeared on the scene and bombarded the Fortress until 1330 hours. The troops simply took to the shelters until the bombardment was over. There were no casualties and only minor damage. During the course of the afternoon, German warships approached the Fortress and from 17000 yards fired a few rounds with negligible results. However, during the afternoon, German forces, landed below Drobak, reached the 155mm batteries at Husvik and Drobak and forced their surrender at about 1800 hours. In the meantime, at 1700 hours, the German airforce again bombarded Oscarsborg for fifteen minutes, again with negligible results.

At 1830 hours the Emden approached the Fortress, and releasing a boat, sent a party ashore to negotiate with the Norwegian Commander. Faced with the fall of Oslo and the surrounding country as well as the threat of an Infantry attack from the rear, the Fortress was forced to unconditional surrender. The Garrison was sent off to a prisoner of war camp where conditions were rigorous, but apparently in accordance with international law. The Norwegian Commander, Col. Berger Eriksen, was allowed to retire to his farm and live in peace. Kapitanleutnant Ing. Blomfield, with 35 men from the sunken Bluecher, became the first German Commandant of Oscarsborg.

About 40 miles below Oslo, Oscarsborg is situated on

North and South Kaholmen Islands (Cow Islands) in the narrowest part of Upper Oslofjord. A sea wall forces all ships, except small vessels, to use the east passage around the islands, thus making the position ideal to block the sea approaches to Oslo. Although the area was a center of Viking operations in earlier times, it was not until 1645 that the first works were begun at Oscarsborg. At this time, six guns were installed. In the year 1814, the Fortress was equipped with 18-pounder guns. It was not until 1853 that work on the present Fortress was begun. This work was completed in 1856, at which time, with 73 large and 38 smaller guns, it was considered the strongest fortress in Northern Europe.

A few years later, the introduction of rifled guns made the armament of the Fortress obsolete. The Norwegians set about to remedy this defect. Still emplaced is a 30.5cm Krupp gun, model of 1878, serial number one. Also, still emplaced, is a battery of the latest type muzzle loaders. The most modern heavy battery that the fortress had was a 28cm 3-gun battery, installed in 1892, with Krupp guns, model of 1892. It was two of these guns that engaged the Bluecher and put her out of action. While the guns were old, they had relatively new ammunition (1925 manufacture). It was the new and effective ammunition that

gave the punch to these old guns. In general, the fortress is identical in construction to our own old open seacoast emplacements, invulnerable to the fire of ships, but completely exposed to air attack.

Had the Germans combined an air attack with the attempted run-by, the operation would undoubtedly have been successful, as it would not have been possible to have manned the armament under air attack.

Due to the obsolete armament, Oscarsborg had been relegated to a secondary role and nearly abandoned as a seacoast fortification, newer works having been built lower down on Oslofjord. The Norwegians used the Fortress primarily as a training center. But it was the old fortress at the narrows that stopped the Germans, which tells us,

perhaps, that we should keep all of our old forts that have any life left in them at all.

An interesting sidelight on Oscarsborg is the present hand-grenade. It was invented by Sergeant Aasen, an Oscarsborg soldier. The Norwegian government was not interested in it, so he gave it to the French government for which he received the title of "Knight" from the French government and was made an honorary Colonel in the French Army.

On 8 May 1945, Captain S. Steinsvieke, along with other Norwegian personnel, released from the PW camp, returned to Oscarsborg to take over from the Germans. Thus ends the saga of what may turn out to be the last, but successful, Coast Artillery action.



Are You Ready For Assignment To A Guided Missile Group?

By Brigadier General J. D. Balmer, USA

The positive qualities of the guided missile artillery weapon, as well as its limitations, are of current and of immediate concern to the artillery officer regardless of the branch insignia that he wears.

Fundamentally, guided missiles are nothing more than guided artillery shells sent on surface to air or surface to surface missions. In the surface to air missile the AAA officer will discover the solutions for the limitations or range of the familiar weapons and the control-of-shell limitations arising from the maneuverability of the airborne target. In the surface to surface missile the FA officer will find the fulfillment of the need for a weapon to supplement long-range howitzers and guns and, to some extent, the aircraft bomber. The guided missile is a weapon that bombards a distant target at no risk to human life (unlike the aircraft method), executes fire missions regardless of adverse weather and darkness, and satisfies the mission with the opportunity for enemy countermeasures reduced to a minimum.

Guided missiles now in being emphasize the immediate need for professional knowledge of the weapon. The various general purposes for which missiles can be used are made self-explanatory by their basic designation. Examples of designations are listed below:

SAM—Surface-to-air missile
AAM—Air-to-air missile
AUM—Air-to-underwater missile
UAM—Underwater-to-air missile
SSM—Surface-to-surface missile
ASM—Air-to-surface missile
SUM—Surface-to-underwater missile
USM—Underwater-to-surface missile

Of those listed above, the up-to-date artilleryman is required to understand the theory and practical application of SSM and SAM. These novel weapons for the traditional artillery role of supporting infantry (armored) units and destroying enemy targets create fresh problems of intelligence, operations, training, electronics, and fire direction—to mention only a few. Because of new propellant, launching and guidance features, there is placed before each artillery officer the challenge of new technical knowledges and skills to be learned, new tactical concepts

to be considered and new organizational patterns to be made familiar.

The guided missile program has advanced to the point where organizational patterns are now considered as actual requirements and not as future or theoretical needs. Surface to surface tactical units are similar to surface to air organizational structure; their T/O&E's closely resemble each other, the exception being found in some of the surface to air units which reflect a greater need for electronic specialists. The 1st Guided Missile Group is in operation in the capacity of a service testing unit. Both surface to air and surface to surface battalions are included within the group, thus indicating the approach to unity in artillery.

How, then does this development affect the individual artillery officer if he lacks the newly demanded technical knowledge, skill and techniques? Training and schooling are obviously required. The Guided Missile Department of the AA & GM Branch of The Artillery School at Fort Bliss has as its objective the teaching of guided missiles tactics and techniques of employment. Experimental grounds are near by at White Sands; Board No. 4 of the Army Field Forces Development Section is located at Fort Bliss, and the 1st Guided Missile Group, already mentioned, is likewise at Fort Bliss. The facilities and training are available; it is up to the artillery officer to make his decision.

The regular course of instruction conducted by the Guided Missiles Department, AA and GM Branch, TAS, is 37 weeks in length, which includes 6 weeks spent on a field trip to the Los Angeles-Pasadena area where the student participates in on-the-job training under a carefully prepared plan in which the development agencies in the guided missiles field in this area are cooperating fully. The prerequisites for the course are:

- a. Commissioned Officer of the Army (R.A., Category III), (1st Lt. to Col.), Navy, Marine Corps or Air Force.
- b. Engineering Degree or its equivalent, to include successful completion of two semesters each of calculus and college physics.

Here is your opportunity to obtain the training required for the modern artilleryman. Applications may be submitted to The Adjutant General through channels.

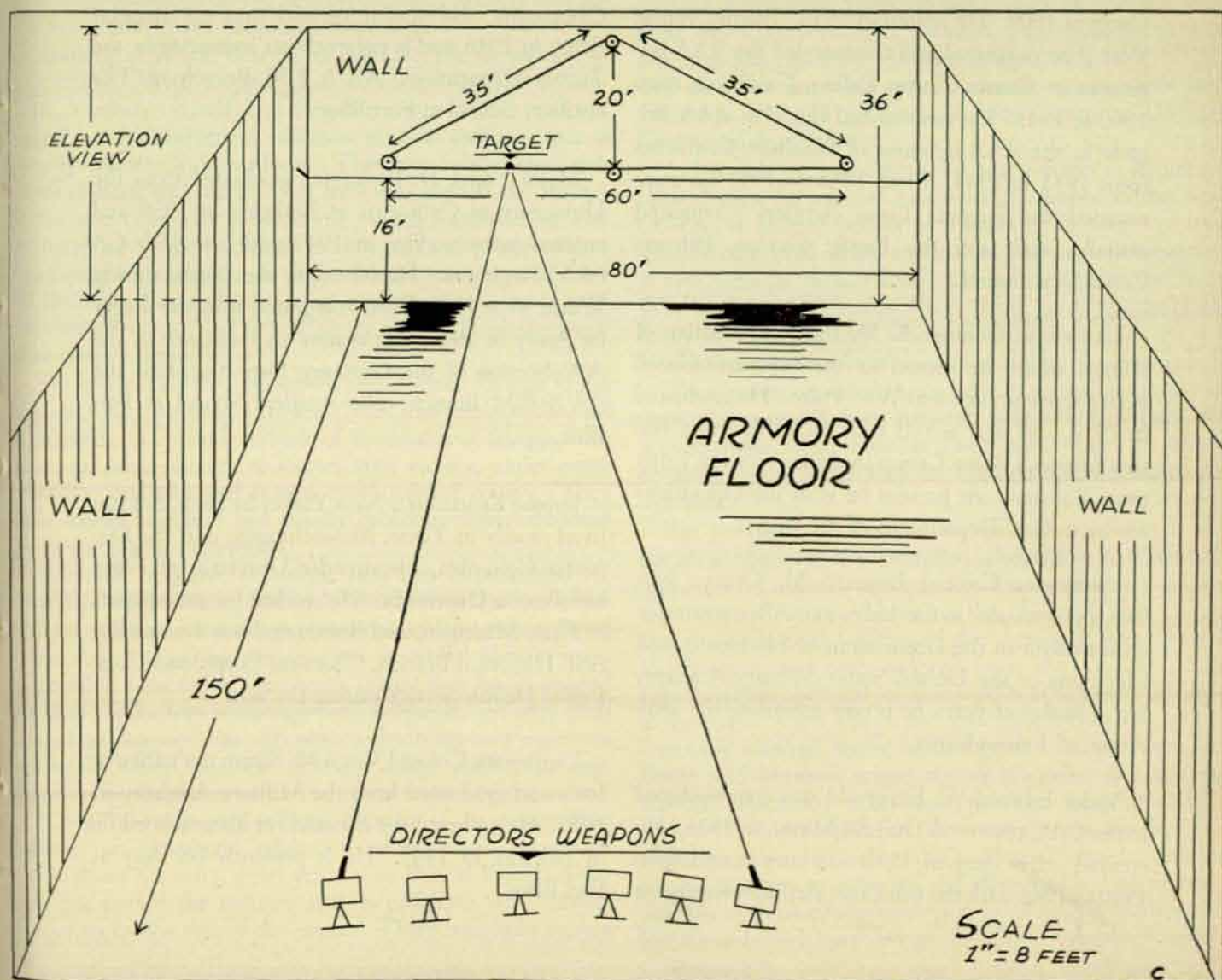
Guardsmen Improvise Indoor AAA Tracking Device

By Major Walter M. Jakubowski, and
Captain Lester Mandell, CAC, Conn. NG

There has existed a great need for some type of indoor training method which would benefit automatic weapons National Guard crews. This need has been met by the 242nd AAA Group, commanded by Colonel Raymond Watt, at Bridgeport, Connecticut, with a device installed in the Bridgeport Armory. It consists of a continuous rope driven by a constant speed motor to give climbing, diving, and crossing courses. A three-inch section of the rope is wound with black friction tape and the center of this black strip has a half-inch band of white adhesive tape. The black

section is the target and the white is the index point for the crosshair setting.

The device is the result of a combination of ideas of officers of the Group. Captain Hoffman, 283rd AAA AW Bn (M), Major Frank Herb, 242nd AAA Group, and the authors, 211th AAA AW Bn (M), all contributed. Installation, and test of the system, was conducted by the authors with the aid of CWO Dominick Colonnese, 211th AAA AW Bn (M). Colonel McGuire and Colonel Perez, the two Battalion Commanders, cooperated with financial



assistance. The cost was kept low, mainly through donations of equipment. A total of nineteen dollars was expended. The only articles bought were a geared reducer and 150 feet of awning cord. Ballbearing pulleys and shafts were constructed by CWO L. Sitlinger, without cost.

The equipment necessary follows: $\frac{1}{4}$ H. P. motor, geared reducer, four-step pulley, two idler pulleys (guide pulleys), an anchor pulley, and awning or sail rope.

A $\frac{1}{4}$ H. P. motor, running at 1725 rpms, drives a 58:1 reducer by direct coupling. The output of the reducer is 30 rpms. To the output side of the reducer is attached a four-step pulley varying from a two-inch diameter pulley to a five-inch diameter pulley. This four-step pulley permits four speeds of travel, 12, 16, 24, and 32 feet per minute. Greater speeds can be obtained by attaching a larger diameter pulley

on the reducer or by coupling the reducer to a variable drive pulley by means of a pulley belt. The variable drive sells for approximately twelve dollars. The target rope is driven directly from the four-step pulley. It may be mentioned here that the awning rope is ideal, since it is small enough to permit a square knot, which ties the ends, to ride over the pulleys with ease. In addition, the rope permits take-up of slack due to its stretching characteristic.

Since the system is driven by a constant speed motor, it creates the ideal situation for setting tracking rates into the director. Up to this time we found that the winter period training on director tracking was nil. With the system now in use, we feel sure that the towed target sleeve will receive its full punishment at summer camp.

ABOUT OUR AUTHORS

Brigadier General Francis P. Hardaway was commissioned a second lieutenant in the Coast Artillery Corps in 1909. He retired in 1948. During World War II he organized and commanded the AAA Replacement Center, Camp Callan, California from 1940 to 1943. He commanded the 37th AAA Brigade in the AAA defenses of Southern California from 1943 to 1944. From 1945 to 1947 he commanded the Panama Coast Artillery Command initially, and later the Pacific Section, Panama Canal Department.

Lieutenant Colonel A. M. Lazar is a native of Illinois where he served in the National Guard prior to his entrance into West Point. He graduated in 1932, and later served with the Fifth Army and the Fifteenth Army Group in Africa and the European Theaters. At present he is in the Operations Division, G-3, Department of the Army.

Lieutenant Colonel Leonard M. Orman is a steady contributor to the JOURNAL. After serving as an instructor in the Department of Electronics and Electricity at the United States Military Academy for a number of years, he is now attending the University of Pennsylvania.

Major Edward W. Fitzgerald was commissioned in the CAC reserve in Duluth, Minn., in 1931. He entered active duty in 1933 and later served from 1940 to 1943 with the 6th Coast Artillery Regiment

at Fort Scott, Cal. During World War II he participated in the Luzon and Southern Philippines Campaigns. He was integrated into the Regular Army in 1946 and is presently an instructor in the Tactics Department, AA & GM Branch of The Artillery School at Fort Bliss.

Major Frank D. Pryor, Jr., graduated from the University of California at Berkeley in 1939 and entered active service in 1940 with the 65th CA (AA) Regiment. He served in the Pacific during World War II and was integrated into the Regular Army in 1946. He is now an instructor in the AW Section of the Gunnery Department of the AA & GM Branch, The Artillery School at Fort Bliss.

Jerome Kearful is a New Yorker by birth, but has lived mostly in Texas, Massachusetts, and the District of Columbia. He attended University of Texas and Boston University. He worked for newspapers in Flint, Michigan, and Boston and was a writer for ASF Historical Branch, Chemical Corps, and U. S. Public Health Service during the war.

Lieutenant Colonel Virgil M. Kimm is a native of Iowa and graduated from the Military Academy in 1927. He gathered the matériel for his article while in Norway in 1945. He is presently on duty at Fort Bliss.

ARMY EDUCATIONAL SYSTEM*

By Honorable Gordon Gray

During my three years as Assistant Secretary, Under Secretary, and Secretary of the Army, I became convinced that no other profession or group in the world provides a lifelong postgraduate education system as extensive as that set up in the Army.

It has always seemed incredible to me that our Regular Army, traditionally small and undernourished in times of peace, has nevertheless been able to fulfill its tremendous responsibilities whenever it has been called upon to do so. Our nation has always been opposed to militarism in any form. It has kept a wary eye and a tight control on its military professionals. Yet, we have repeatedly, and on dangerously short notice, brought forth military leaders who are among the most capable in the world. Most of these men have been unknown Americans who have come forward when called upon, to lead us to victory over the mightiest military machines and the best professional soldiers that aggressor nations have been able to produce.

Looking at World War II, for example, the record is most impressive. With a speed that sometimes seemed miraculous, a relative handful of Regular Army officers and enlisted men transformed millions of raw civilians into a highly efficient fighting force. They not only trained millions of basic technicians, but they also trained the leaders—the noncoms who provide the strong backbone of any military force, the hundreds of thousands of junior officers who must actually come to grips with the enemy at the head of their platoons and companies, and the thousands of staff officers who must decide and direct actions involving intricate technical problems.

On battlefields throughout the world, from Europe to the Orient, from the jungles to the Arctic, our commanders led thousands and even hundreds of thousands of troops, from this and other nations, to victory after victory, under every possible condition and against every type of enemy. They also solved logistical and supply problems never dreamed of in the history of warfare.

It would be naïve to assume that this unparalleled triumph of mass training and global leadership was just a fortunate accident, that our professional soldiers, when faced with these staggering assignments, stumbled blindly upon successful makeshifts. The truth is that they had managed to keep themselves amazingly well prepared, not only with sound techniques, but also with a flexibility and openness of mind which enabled them to adapt readily to fast-developing situations.

They did it, in part at least, because of an outstanding system of classroom education which was continued throughout the long, quiet years after World War I. During this period the military and its problems were largely forgotten by the rest of the nation. There was little money

for new weapons and equipment. There was none for large-scale maneuvers and exercises. Sometimes there was not even enough for sufficient target-practice ammunition.

The most impressive feature of the Army education system begins after an officer has earned his commission, through graduation from the Academy or by other means. Then begins a career during which "postgraduate" education in advanced schools is systematically provided at fairly regular and frequent intervals for every officer. First, there is the Branch School, where officers receive technical training at company and battalion level in their particular arm or service. After a few years of troop duty, the officer returns to his Branch School for more "postgraduate" study in the form of an Advanced Course of 9 or 10 months, to prepare him for more responsible assignments. Every officer goes at least this far in the Army education system.

After a few more years, an officer may be selected to attend the Command and General Staff College at Fort Leavenworth, Kansas. At least half of all Army officers will complete this nine months' course, which deals with command and staff problems of every nature at Division, Corps, and Army levels.

As his next step, an officer—by now a major or lieutenant colonel—may be selected to attend the Armed Forces Staff College, a unified school at Norfolk, Virginia, to train selected officers of all the services in joint oversea operations at task force or theater level. Or he may go to the Army War College, the apex or Ph.D. level, so to speak, of the Army education system, where senior officers study for 9 to 10 months. A few officers may attend both these schools.

Thus, many qualified Army officers during their first 20 years of service will have attended at least four schools, and possibly more, since there are a number of specialist schools of various types which may be attended at any point during this time.

But the peak of the military education system is still ahead, in the form of two unified schools that deal with the highest level military and other problems of a national and international nature. These are the National War College and the Industrial College of the Armed Forces, both in Washington and both adapted from the top-level Army schools which operated for many years at the same location, as the Army War College and the Army Industrial College. Carefully selected senior officers of the Army, Navy, Air Force, and Marines attend one or the other of these two schools, depending upon their previous training and experience. One emphasizes the strategic considerations of global warfare, the other the industrial aspects, and the studies here are so complex and all-encompassing that it is difficult to think of a counterpart in civilian education, unless it would be a very special institute of advanced studies.

Meanwhile, several hundred Regular Army officers are

*Extracted from a speech in Washington, 3 May 1950.

assigned each year to civilian colleges and universities for graduate studies in many critical specialist fields, such as nuclear physics, engineering, law, business administration, international relations, and so on. A present there are more than 700 Army officers so occupied in 43 colleges and universities throughout the nation, as well as in three foreign schools."

I challenge any profession to show such an extensive and systematic program of graduate education. And this system has been operating in the Army in essentially the same form for many decades. Here, I believe, is the key to the traditionally high record of military, national, and international leadership provided by our Regular Army officers.

I am happy to say that this tradition apparently holds as true today as ever. Only a short time ago, just before I left my job as Secretary of the Army, I received an official report from Germany in which the writer made the following statement about the Army officers he had worked with:

"To me, it was a constant source of amazement that men trained to fight could, when catapulted into positions requiring skills totally unrelated to their previous experiences, show the social vision they displayed . . ."

I believe that we can depend upon the Army education system—better today than ever before—to develop in the future officers of the same high standards of character and performance.

Meanwhile, we must not overlook the qualities of the men, themselves. Our career officers are highly intelligent and capable Americans who have voluntarily chosen a life of public service, with no possibility of great financial remuneration. They live, work, and think according to necessarily broad concepts—nationally and internationally rather than locally; for the interests of the community rather than for the interests of a single business or industry within the community. They are dedicated to the protection of the

American way of life, so they have studied and thought about that way of life perhaps more thoroughly than most of us.

Our officer material today is the best we have ever had, and I must remind you that of our 20,000 or so Regular Army career officers less than a third are West Point graduates. Most of the remainder are integrated officers, outstanding men from all walks of life who proved as wartime officers that they had qualities of character and leadership consistent with our highest standards. All of these officers are on the same basis regardless of their origin, with equal opportunity for unlimited advancement.

Education is the Army's constant concern—self-education and the education of others. The career officer is ever a student, of necessity; for his profession deals with problems that are all-encompassing in nature, and constantly changing. They involve every aspect of our national and international life, as well as the national and international life of other peoples throughout the world. And the career officer is unceasingly a teacher; for the Army is a vast school in which training never stops—in the field, in the barracks, in the offices and the headquarters, from the tropics to the Arctic, the Army officer is engaged daily in teaching his troops and monitoring their progress. In addition, most officers will serve at one time or another as instructors at a service school or in connection with reserve force activities.

I believe our nation finally has learned, after painful and bitter lessons, that national security is an all-inclusive and continuing problem that must be of constant concern to all of us. We have learned that our military policies must be welded to our national policies, domestic and foreign, and that our military men must have a vital place in our national community.

As a result, all of us will be working more closely with our Army from now on, and we will need to know and understand it better than ever before. I hope that my remarks today have contributed to such an understanding.



Army War College To Be Relocated At Carlisle Barracks, Pa.

The recently re-established Army War College, temporarily located at Fort Leavenworth, Kansas, will be permanently established at Carlisle Barracks, Pennsylvania, the Department of the Army announced.

Under plans approved by Secretary of Defense Louis Johnson, the move will necessitate relocation of the Armed Forces Information School, the Army Security Agency School, and the Chaplains' School. The three schools, now located at Carlisle, will complete transfer to new locations by April 15, 1951. A decision as to locations for the three

facilities is now under study.

Re-establishment of the Army War College at the apex of the Army educational system was announced last December as the result of recommendations by the Army Board on the Army Educational System for Officers. The 1950-51 course was scheduled for Fort Leavenworth pending selection of a permanent site.

The Army said a gap has existed in its educational system since the former War College was converted to the National War College in 1946.

News and Comment

Executive Council Election

The term of office for the following members of the Executive Council expires on 31 December 1950:

Lieutenant General LeR. Lutes, USA, President

Brigadier General John C. Henagan, 51st Division, S.C. N.G.

Colonel Charles M. Boyer, Assistant Executive Director, R.O.A.

Major Bergen B. Hovell, GSC (CAC)

A nominating committee will prepare a slate for the election and publish the ballots in the next issue. All members are invited to forward to the Editor now any nominations or suggestions for consideration of the committee.

109th AAA Conducts Test Mobilization

A practice alert was ordered at 0900, Sunday, 18 June, for the members of the 109th AAA Brigade of the Illinois National Guard. No prior notice had been given to anyone, and the D-hour was known only to the Brigade Commander, Brigadier General Julius Klein, and his Executive Officer, Colonel Frank X. Meyers.

The alert was designed to test the mobilization plan of the Brigade and the following attached units:

202d AAA Group—Colonel John W. Anslow

229th AAA Group—Colonel Edward Isaachsen

698th AAA Gun Battalion—Lieutenant Colonel Frank Monico

768th AAA Gun Battalion—Lieutenant Colonel Theodore H. Kuyper

179th AAA Operations Detachment—Major Jess L. Butler

The alert call was communicated through the command chain by telephone and any other means to reach the personnel wherever they might be. By 0915 officers and men began to pour into the Armory. By 1100 General Klein pronounced the mobilization test a success and congratulated the guardsmen upon their fine performance.

West Point Cadets Visit Bliss

Demonstrations of antiaircraft artillery firing and of the use of automatic weapons in close support of infantry, a mechanized review, and a visit to White Sands Proving Ground, N. M., were high points in the visit of 480 United States Military Academy cadets to Fort Bliss, June 9-14.

The cadets' itinerary also included a tour of the Replica

of Old Fort Bliss, and various guided missiles, light and heavy gunnery and tactics exhibits on the post, and a visit to the 1st Guided Missile Group area.

The West Pointers, under command of Lt. Col. S. E. Gee, departed from Fort Bliss, June 14, for Fort Sill, Oklahoma, as the next stop on their combined Arms Instruction trip to various military installations.

1 1 1

General Irvine, Commanding General of the New AAA Command, was born in Georgia in April 1892 and was graduated from Emory University in 1913. He entered Federal service with the Georgia National Guard and served in enlisted and officer status until he was commissioned a second lieutenant of Coast Artillery in the Regular Army in June 1917.

In August, 1932, he became an instructor at the Coast Artillery School, and in April, 1933, took part in extensive antiaircraft and Air Corps tests at Fort Knox, Kentucky, and returned to the School. He entered the Army War College in Washington, D. C. in August, 1935, and was graduated in June, 1936, and assigned to the Sixth Coast Artillery at Fort Winfield Scott, California.

He was an instructor at the Command and General Staff School, Fort Leavenworth, in August, 1938, and in May, 1941, was ordered to Washington, D. C. for duty with the War Plans Division of the War Department General Staff. In April, 1942, he was named to command the 48th Coast Artillery Brigade. He assumed command in August, 1942, at Norfolk, Virginia, and in January, 1944, moved with it to Lebanon, Tennessee.

In March, 1944, he was named deputy assistant chief of



Major General Willard W. Irvine

staff, G-3, War Department General Staff, Washington, D. C.

In May, 1945, he was assigned to command the 70th Antiaircraft Artillery Brigade in the Pacific. He became commanding general of the Western Pacific Base Command in November, 1945, with headquarters at Saipan, Marianas. In January, 1947, he was appointed commanding general of the Marianas-Bonins Base and deputy commander of the Marianas-Bonins Command on Guam.

He returned to the United States in December, 1947, to become president of the Army Discharge Review Board at Washington, D. C. He was assigned to the Office, Chief of Army Field Forces in September, 1949, and appointed Department of the Army representative to Continental Air Command, with station at Mitchel Air Force Base, New York.

DECORATIONS

He was awarded the Legion of Merit in May, 1945, "for exceptionally meritorious conduct in the performance of outstanding services from August, 1942, to February, 1944."

He was awarded an Oak Leaf Cluster to his Legion of Merit in July, 1945.

He was awarded a second Oak Leaf Cluster to his Legion of Merit for meritorious service and exceptional leadership from November, 1945, to June, 1946, as commanding general, Western Pacific Base Command.

1 1 1

AAA Summer Training At Fort Miles, Delaware

More than 500 antiaircraft artillery reservists completed two weeks of intensive field training at the Organized Reserve Corps summer camp at Fort Miles, Delaware on July 9th.

Reserve units from Delaware, Maryland, Ohio, Pennsylvania, Virginia, West Virginia and the District of Columbia completed training in gun drill, rifle marksmanship, communications, motor marching and physical fitness. The last few days were spent firing the "quad 50's" and the 40-millimeter guns.

More than 30 recruits with no previous military experience received partial basic training during the encampment. Their training consisted of such subjects as map reading, close order drill, tent pitching, hikes, grenade throwing and observation of gun crew drill on the automatic weapons. One day was spent on the small-arms range firing rifles and one day firing carbines. Director of recruit training was Capt. John Eskoff, South Charleston, W. Va., artillery instructor for West Virginia Military District.

The 19th Antiaircraft Artillery Group of Fort Meade, Md., commanded by Col. George R. Carey, supplied the instruction teams, weapons and other support for the ORC.

This is the second summer Fort Miles has been used by AAA reservists for summer training. Commanded by Col. O. C. McIntyre, it is located near Lewes, on the Delaware.

For the first time in their postwar training, Reservists have had the advantage of complete equipment and the opportunity to function in key positions with Regular Army units during actual firing practice and tactical exercises.

The 318th AAA Gun Battalion of Delaware and the

853d Coast Artillery Battery of Philadelphia spent the first of the two weeks training at Fort Meade, Md., and moved to Bethany Beach, about 20 miles south of Fort Miles, for firing 90-millimeter guns during the second week.

Units taking the training included the 302d AAA Group, Ohio; 399th AAA AW Battalion and 472d AAA AW Battalion, Ohio; 455th AAA AW Battalion, W. Va.; 304th AAA Group and 387th Battalion, Delaware; 457th Battalion, Baltimore; 313th Group and 459th Battalion, Pittsburgh; 453d Battalion, D. C.; 326th Group and 479th Battalion, Philadelphia; and 159th Airborne Battalion, Richmond, Va.

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Army Ordnance Test Missile Fired Distance of 50 Miles

The Army Ordnance Department successfully fired an "ORDCIT" test missile approximately 50 miles at White Sands Proving Ground, New Mexico, on July 11.

The test flight established no new records for altitude or range, but the missile is the first American designed and built surface-to-surface supersonic missile to be remotely guided from the ground, Ordnance research officials said.

Not a weapon, the test missile is a vehicle designed to test components under development which may or may not be used in some future weapon application. Purpose of the flight was to test integrated rocket components and systems about which advanced knowledge under flight conditions is badly needed. One important phase of this program is the study of remote control of supersonic missiles: their guidance from the ground while they are in flight.

The vehicle-missile tested incorporates all the latest improvements resulting from the research in components at the Jet Propulsion Laboratory of the California Institute of Technology since 1947. Specifically, the objective of this test was the evaluation of a new lightweight type of propulsion system and the determination of its effect, if any, under actual flight conditions, on the control and guidance components.

The ORDCIT is 45 feet long and 2½ feet in diameter, and has a cylindrical contour slimmer than the V-2. Its motor operates on aniline and nitric acid, the former as the fuel and the latter as the oxidizer. Like other large guided missiles, it is launched vertically without the use of booster rockets, and angles over toward its surface target after it has gained altitude.

1 1 1

National Guard Combat Units Near Complete Organization

The National Guard has completed organization of approximately 95 per cent of its combat units, the National Guard Bureau announced.

Twenty allotted Regimental Combat teams, 23 Infantry, and two armored divisions have been organized. The remaining two Infantry divisions lack a total of only four units to complete organization.

The extent of organization of other units is: 575 of the 664 nondivisional Antiaircraft Artillery units, 109 of the 135 Armored Cavalry units; 72 fighter squadrons, and 12 bomber squadrons.

COAST ARTILLERY ORDERS

DA and AF Special Orders Covering May 1 through
June 30, 1950. Promotions and Demotions not included.

GENERAL

Starr, Rupert E., Brig. Gen., ret fr active sr.

COLONELS

Amoroso, A. D., to Third A, 3340th ASU Ga ROTC Instr Gp, Atlanta, Ga.
Boyd, H. R., to Stu Det Army War College, Ft Leavenworth, Kans.
Carey, G. R., to 4054th ASU AA and GM Br Arty Sch, Ft Bliss, Tex.
Carter, M. S., to Far East Comd, Yokohama, Japan.
Connor, R. T., to First A 1100th ASU New England Sub Area, Boston, Mass.
Gard, H. P., to 19th AAA Gp, Ft Meade, Md.
Hartman, N. E., to far East Comd, Yokohama, Japan.
Hopkins, A., to OJC, Wash, DC.
Jackson, H. R., to EUCOM, Bremerhaven, Germany.
Kochewar, J. H., to Far East Comd, Yokohama, Japan.
Luce, D., to EUCOM, Bremerhaven, Germany.
Schultz, M. H., to Third A 3340th ASU Ga NG Instr Gp, Savannah, Ga.
Scott, W. W., to Far East Comd, Yokohama, Japan.
Smith, J. C., to First A 1100th ASU New England Sub Area, Boston, Mass.
Timberlake, E. W., ret fr active sr.
Wilson, A. E., to OC of S, Wash, DC.
Wortman, V. W., to Second A 2306th ASU Ohio Mil Dist, Ft Hayes, Ohio.

LIEUTENANT COLONELS

Abbey, W. W., to Sixth A, 6514th ASU Oregon Mil Dist Hq, Vancouver Bks, Wash.
Albergotti, J. S., to Hq Third Army, Ft McPherson, Georgia.
Anderson, G. A., to Sixth A, 31st AAA Brigade, Ft Lewis, Washington.
Ballentine, J. F., to First A, 1242d ASU NY Ng Instr Gp, New York, NY.
Baldry, G. A., to EUCOM, Bremerhaven, Germany.
Baltzer, N. W., to 35th AAA Brigade, Ft Meade, Md.
Barton, C. T., to Stu Det Hq Third A, Air War College, Maxwell AFB, Ala.
Beavers, B., to Joint Long Range Pr Grd, Banana River, Cocoa, Fla.
Bush, E. L., to Stu Det, Armed Forces Staff College, Norfolk, Va.
Buynski, A. S., to Hq Sixth Army, San Francisco, Calif.
Cassidy, R. T., to 60th AAA AW Bn, Ft Ord, Calif.
Chapman, E. A., to OC of S, Washington, DC.
Claffee, R. A., to 4052d ASU, AAA & GM Center, Ft Bliss, Texas.
Corum, D. R., to FEC, Yokohama, Japan.
Darrach, J. T., to FEC, Yokohama, Japan.
Davis, P. C., to OC of FS, Washington, DC.
Day, F. E., to OCAFF, Johns Hopkins Univ Lab, Silver Spring, Md.
Diessel, C. J., to 4052d ASU, AAA & GM Center, Ft Bliss, Texas.
Durgin, C. F., to Hq Fifth Army, Chicago, Ill.
Ellis, W. F., to 31st AAA Brigade, Ft Lewis, Wash.
Fish, J. H., to Hq Third Army, Ft McPherson, Ga.
Foster, K. W., to Stu Det AFSC, Norfolk, Va.
Franson, P. O., Jr., to FEC, Yokohama, Japan.
Gilman, S. I., to OC of S, Washington, DC.

Glassen, C. E., to Office of the Exec Secy Joint Welfare Bd, Washington, DC.
Hain, R. W., to OC of S, Washington, DC.
Haskell, H. G., to Stu Det, AFSC, Norfolk, Va.
Heasty, C. F., Jr., to Stu Det, Hq First A, Princeton Univ, Princeton, N.J.
Hewitt, H., to Stu Det, Hq Third A, Air War College, Maxwell AFB, Ala.
Hudiburg, H. B., to FEC, Yokohama, Japan.
Johnson, H. O., to Fourth A, Stu Det 4054th ASU, TAS, Ft Sill, Okla.
Jordan, R. E., to USMA, West Point, N.Y.
Keller, J. S., to O Cof S, Washington, DC.
Kopcsak, A. A., to AFF Bd No. 4, Ft Bliss, Tex.
Kush, G. L., to FEC, Yokohama, Japan.
Land, J. A., to AFF Bd No. 4, Ft Bliss, Tex.
Laney, J. R., Jr., to OCAFF, Ft Monroe, Va.
Lawlor, R. J., to Stu Det, Hq First A, Naval War College, Newport, R.I.
Leahy, T. H., to 4052d ASU, AAA & GM Center, Ft Bliss, Tex.
Lewis, R. H., to 4052d ASU, AAA & GM Center, Ft Bliss, Tex.
Liwski, F. A., to AGO, Washington, DC.
Loiselle, P. A., to FEC, Yokohama, Japan.
McGoldrick, F. M., to AFF Bd No. 4, Ft Bliss, Tex.
Marshall, O. K., to EUCOM, Bremerhaven, Germany.
May, M. W., Jr., to 4052d ASU, AAA & GM Center, Ft Bliss, Tex.
Mial, J. P., to US Army Caribbean, Ft Amador, C.Z.
Moore, J. C., to 7689th Hq Gp., USFA, Salzburg, Austria.
O'Connor, D. A., to Stu Det, AFSC, Norfolk, Va.
Orrick, E. G., to Stu Det, TAS, Ft Sill, Okla.
Page, R. McK., to 4054th ASU, AAA & GM Center, Ft Bliss, Texas.
Partin, C. L., to EUCOM, Bremerhaven, Germany.
Peterson, I. A., to OCOFS, Washington, DC.
Pierre, G. H., Jr., to 31st AAA Brigade, Ft Lewis, Washington.
Pope, W. P., to 7689th Hq Gp, USFA, Salzburg, Austria.
Powers, A. B., to Fourth A, 4305th ASU, Tex NG Instr Gp, El Paso, Tex.
Ranney, D. A., to 4052d ASU, AAA & GM Center, Ft Bliss, Tex.
Raymond, M. B., to Ryukyus Comd, Okinawa.
Reubel, H. B., to 82d Abn Div, Ft Bragg, N.C.
Russell, M. R., to Stu Det, AFSC, Norfolk, Va.
Rutz, L. J., to EUCOM, Bremerhaven, Germany.
Santos, M. M., to Sixth A, 6002d ASU, San Francisco, Calif.
Sell, W. B., to AFF Bd No. 4, Ft Bliss, Texas.
Shive, D. W., to Dept of the Navy, Navy War College, Newport, R.I.
Shumate, E. H., to 4054th ASU, AAA & GM Center, Ft Bliss, Tex.
Skinrood, N. A., to FEC, Yokohama, Japan.
Smith, R. G., Jr., to 4054th ASU, AAA & GM Center, Ft Bliss, Tex.
Stayton, T. V., to FEC, Yokohama, Japan.
Steele, P., to OCAFF, Ft Monroe, Va.
Stevens, J. D., to OC of S, Washington, D. C.
Stone, J. E., to Fourth A, 4050th ASU, TAS, Ft Sill, Okla.
Thompson, E. H., Jr., to USMA, West Point, N.Y.
Tubbs, H. S., to OCAFF, Ft Monroe, Va.
Van Court, L. P., to US Army Alaska, Ft Richardson, Alaska.
Vestal, W. M., to 22d AAA Gp., Ft Custer, Mich.
Warfield, B. M., to 4052d ASU, AAA & GM Center, Ft Bliss, Tex.

Webster, G. B., Jr., to 4052d ASU, AAA & GM Center, Ft Bliss, Tex.
Wellenreiter, F. L., to Second Army, 2436th ASU ROTC, Cincinnati, Ohio.
Wickham, K. G., to FEC, Yokohama, Japan.
Wolfe, Y. H., to O Secy of Defense, Wash, DC.
Woodman, E. A. H., to FEC, Yokohama, Japan.
Yarnall, K. L., to Hq Fourth Army, Ft Sam Houston, Tex.
Young, C. G., to US Army Alaska, Ft Richardson, Alaska.

MAJORS

Ackner, N. E., to 35th AAA Brig, Ft Meade, Md.
Anderson, D. L., to Sixth A 6513th ASU Calif ROTC Instr Gp, San Francisco, Calif.
Backstrom, B. H., to 35th AAA Brig, Ft Meade, Md.
Benner, J. A., to 7689th Hq Gp USFA, Salzburg, Austria.
Berendt, H. W., to Ryukyus Comd, Okinawa.
Boomer, E. F., to EUCOM, Bremerhaven, Germany.
Bowman, J. W., to Fourth A 4302d ASU La ROTC Instr Gp, NW State College of La, Natchitoches, La.
Buntyn, J. R., to Marianas Bonins Comd, Guam.
Burrell, W. E., to 4052d ASU AAA and GM Cen, Ft Bliss, Tex.
Butler, S. J., to Stu Det, AFSC, Norfolk, Va.
Clanton, H. M., to AFF Bd No. 4, Ft Bliss, Tex.
Covert, J. R. M., to Office Chief AFF, Great Neck, Long Island, NY.
Collison, T. D., to Stu Det Hq Second A, Ohio State Univ, Columbus, Ohio.
Cushing, C. B., Jr., to Far East Comd, Yokohama, Japan.
Ellis, B. J., to Third A, Ft McPherson, Ga.
Evans, J. T., to Sixth A, San Francisco, Calif.
Farrar, W. L., to Stu Det Lang Sch, Monterey, Calif.
Fitzgerald, E. W., to Stu Det Hq Third A, Air Comd and Staff Sch, Maxwell AFB, Ala.
Floyd, A. J., to Third A 3330th ASU SC ROTC Instr Gp, Charleston, SC.
Fox, E. W., Jr., to Ryukyus Comd, Okinawa.
Frei, J. K., to Stu Det AA and GM Br Arty Sch, Ft Bliss, Tex.
Gillespie, J. J., to 4052d ASU AAA and GM Cen, Ft Bliss, Tex.
Grabove, M., to 4054th ASU AAA and GM Cen, Ft Bliss, Tex.
Graham, H. E., to 4054th ASU AAA and GM Cen, Ft Bliss, Tex.
Grandin, D. G., to 22d AAA Gp, Ft Custer, Mich.
Greenberg, B. I., to 4054th ASU AAA and GM Cen, Ft Bliss, Tex.
Gushurst, C. E., to 4052d ASU AAA and GM Cen, Ft Bliss, Tex.
Hendry, J. E., Jr., to 4054th ASU AAA and GM Cen, Ft Bliss, Tex.
Hilton, E. H., to 4052d ASU AAA and GM Cen, Ft Bliss, Tex.
Holmes, J. H., to First A 1100th ASU New England Sub Area, Boston, Mass.
Holt, A. E., to First A, Ft Jay, NY.
Howze, F. B., to Far East Comd, Yokohama, Japan.
Hussey, W. A., to Fourth A 4302d ASU La ROTC Instr Gp, Natchitoches, La.
James, L. B., to Joint Long Range PR Gr, Banana River, Cocoa, Fla.
Keller, H. W., to 4052d ASU AAA and GM Cen, Ft Bliss, Tex.
King, W. I., to US Army Alaska, Ft Richardson, Alaska.

McGrane, E. J., Jr., to AA and GM Br Arty Sch, Ft Bliss, Tex.

Macaulay, J. B., to 6th A 6516th ASU Wash ROTC Instr Gp, Univ of Wash, Seattle, Wash.

Meacham, J. R., to Ryukyus Comd, Okinawa.

Montrone, A. J., to 35th AAA Brig, Ft Meade, Md.

Mundy, R. W., to Stu Det AA and GM Br Arty Sch, Ft Bliss, Tex.

Murphy, R. P., to EUCOM, Bremerhaven, Germany.

Nanney, D. Y., to 4052d ASU AAA and GM Cen, Ft Bliss, Tex.

Norris, R. R., to USMA, West Point, NY.

Osthues, H. E., to Far East Comd, Yokohama, Japan.

Parrott, J. B., to Far East Comd, Yokohama, Japan.

Payne, H. N., to Far East Comd, Yokohama, Japan.

Peterson, W. H., to US Army Caribbean, Ft Amador, CZ.

Redd, L. B., to Far East Comd, Yokohama, Japan.

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 Sakowski, J. M., to 35th AAA Brigade, Ft Meade, Md.
 Sarcione, A. V., to FEC, Yokohama, Japan.
 Seay, W. B., to US Army Alaska, Ft Richardson, Alaska.
 Selin, R. P., to 450th AAA AW Bn, Ft Ord, Calif.
 Semsch, P. L., to US Army Alaska, Ft Richardson, Alaska.
 Setley, J. B., to 5th AAA AW Bn, Ft Sheridan, Ill.
 Shackelford, A. E., to 31st AAA Brigade, Ft Lewis, Wash.
 Shaw, H. E., to EUCOM, Bremerhaven, Germany.
 Sheldon, D. M., to US Army Alaska, Ft Richardson, Alaska.
 Sherman, R. E., to 82d AAA AW Bn, Ft Lewis, Wash.
 Silk, T. R., Jr., to 82d AAA AW Bn, Ft Lewis, Wash.
 Smith, P. C., to FEC, Yokohama, Japan.
 Smith, C. L., to 450th AAA AW Bn, Ft Ord, Calif.
 Smith, J. P., to 22d AAA Gp, Ft Custer, Mich.
 Smith, N. D., to 22d AAA Gp, Ft Custer, Mich.
 Smithea, W. R., to FEC, Yokohama, Japan.
 Spann, C. O., to Third Army, Ft McPherson, Georgia.
 Stahlman, H. E., to 82d AAA AW Bn, Ft Lewis, Wash.
 Stams, G. A., to 450th AAA AW Bn, Ft Ord, Calif.
 Stechmann, A. J., to FEC, Yokohama, Japan.
 Steenburn, D. H., to FEC, Yokohama, Japan.
 Stephenson, W. E., to EUCOM, Bremerhaven, Germany.
 Strauss, G. H., to FEC, Yokohama, Japan.
 Sturdivant, L. W., to US Army Alaska, Ft Richardson, Alaska.
 Taylor, F. R., to 60th AAA AW Battalion, Ft Scott, Calif.
 Tholl, E. F., Jr., to 5th AAA AW Bn, Ft Sheridan, Ill.
 Toner, J. P., to FEC, Yokohama, Japan.
 Trabue, E. N., to EUCOM, Bremerhaven, Germany.
 Turner, G. E., Jr., to FEC, Yokohama, Japan.
 Tyus, W. L., to FEC, Yokohama, Japan.
 Vanderbleek, J., to 4052d ASU, AAA & GM Ctr, Ft Bliss, Tex.
 Vogel, J. O., to FEC, Yokohama, Japan.
 Ward, J. W., to 4052 ASU, AAA & GM Ctr, Ft Bliss, Tex.
 Ware, W. O., to 4052 ASU, AAA & GM Ctr, Ft Bliss, Tex.
 Webb, H., to 450th AAA AW Bn, Ft Ord, Calif.
 Welty, R. G., Jr., to 22d AAA Gp, Ft Custer, Mich.
 West, W. F., to FEC, Yokohama, Japan.
 Whitmarsh, J. A., Jr., to FEC, Yokohama, Japan.
 Williams, F. L., to 31st AAA Brigade, Ft Lewis, Wash.
 Williams, L. W., to FEC, Yokohama, Japan.
 Wood, J. C., Jr., to FEC, Yokohama, Japan.
 Woolridge, S., to 80th AAA Abn Bn, Ft Bragg, N.C.
 Young, J., III, to US Army Alaska, Ft Richardson, Alaska.
 Yodice, F. C., to 82d AAA AW Bn, Ft Lewis, Washington.



Rhode Island Unit Wins Second "Eisenhower Trophy"

The Eisenhower Trophy was awarded to Battery C, 243d AAA AW Battalion for the second time. This award is presented to the outstanding battery in the state for the year 1949. The trophy was presented by Colonel Arthur S. Champany, Chief of Staff, New England Sub Area, to Captain Raymond J. Makowsky, Battery Commander, on May 24 at the Andrews Memorial High School in Bristol, Rhode Island. Others present included Brig. General James A. Murphy, Acting Adjutant General of the State of Rhode Island, Colonel Peter E. Donnelly, Commanding Officer of the 243d Antiaircraft Artillery Group, and Lt. Colonel Everett E. McMillan, Commanding Officer of the 243d Antiaircraft Artillery Automatic Weapons Battalion, Honorable Raymond H. Hawksley, General Treasurer of

the State of Rhode Island, representing the Governor, and Dr. Samuel D. Clark, President of the Town Council of Bristol.

The State Board, under the chairmanship of The Adjutant General, Brigadier General James A. Murphy, made the award on the basis of personnel strength, drill attendance, and outstanding performance in armory and summer field training.

Battery C of the 243d AAA AW Battalion received federal recognition on March 12, 1947. The unit reached its authorized strength of 140 men in 1949. Serving with Captain Raymond J. Makowsky are Lieutenants Robert A. Draper, Samuel R. Campanella, Roudet O. Turner, Philip J. Gilchrist, and Warrant Officer Anthony Del Toro.

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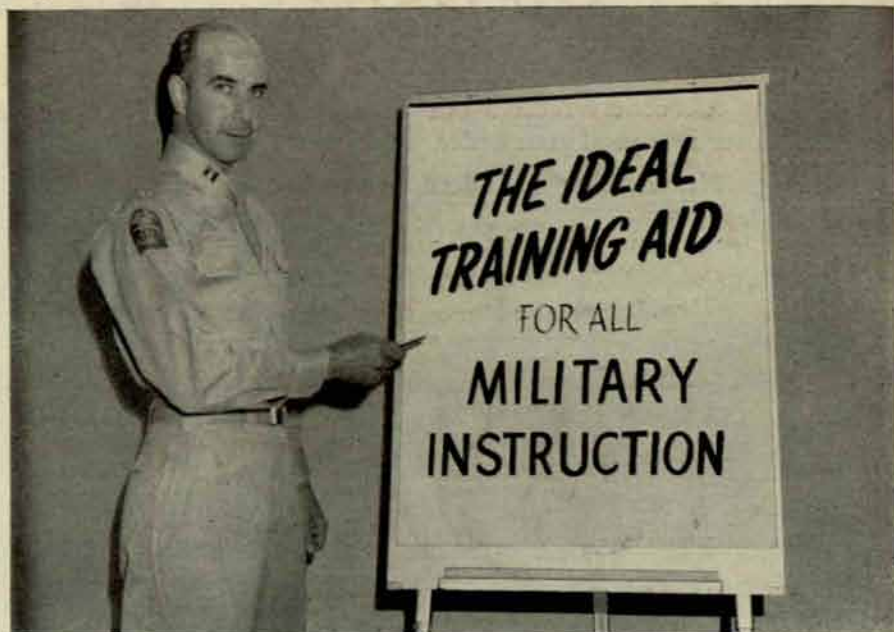
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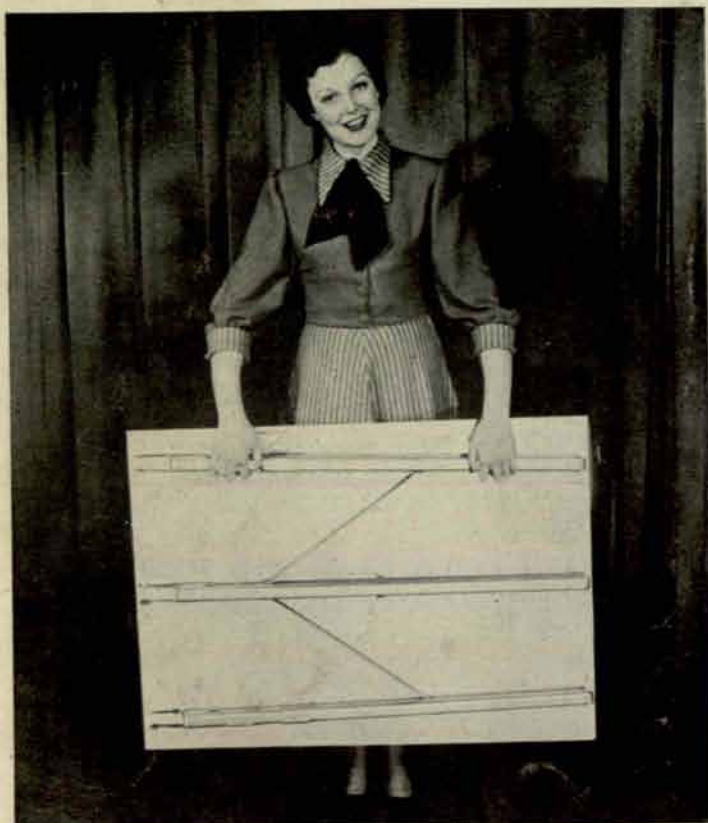
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